DCR-TRV15/TRV17

RMT-814

SERVICE MANUAL

Ver 1.5 2003. 11

Self Diagnosis Supported model

Digital Handycam

InfoLITHIUM M SERIES

Cassette Memory

MEMORY STICK

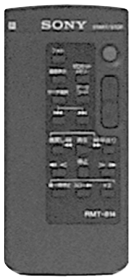


Photo : DCR-TRV17
RMT-814

US Model
Canadian Model
Argentina Model
Brazilian Model
DCR-TRV17
E Model
Hong Kong Model
Korea Model
Tourist Model
DCR-TRV15/TRV17
J MECHANISM

On the VC-260 board

This service manual provides the information that is premised the circuit board replacement service and not intended repair inside the VC-260 board.
Therefore, schematic diagram, printed wiring board, waveforms, parts location and electrical parts list of the VC-260 board are not shown.
The following pages are not shown.

Printed wiring board ..... Pages 4-11 to 4-14
Schematic diagram ..... Pages 4-15 to 4-50
Waveforms and parts location ..... Pages 4-93 to 4-96
Electrical parts list ..... Pages 6-17 to 6-26

For MECHANISM ADJUSTMENTS, refer to the "DV MECHANICAL ADJUSTMENT MANUAL Ⅵ J MECHANISM " (9-929-807-11).

SPECIFICATIONS

Video camera recorder

System

Video recording system
2 rotary heads
Helical scanning system
Audio recording system
Rotary heads, PCM system
Quantization: 12 bits (Fs 32 kHz, stereo 1, stereo 2), 16 bits (Fs 48 kHz, stereo)
Video signal
NTSC color, EIA standards
Usable cassette
Mini DV cassette with the Mini DV mark printed
Tape speed
SP: Approx. 18.81 mm/s
LP: Approx. 12.56 mm/s
Recording/playback time (using cassette DVM60)
SP: 1 hour
LP: 1.5 hours
Fastforward/rewind time (using cassette DVM60)
Approx. 2 min. and 30 seconds

Viewfinder
Electric viewfinder (color)
Image device
4.5 mm (1/4 type) CCD (Charge Coupled Device)
Approx. 680 000 pixels (Effective: Approx. 340 000 pixels)
Lens
Carl Zeiss
Combined power zoom lens
Filter diameter
30 mm (1 3/16 in.)
10× (Optical), 120× (Digital)
Focal length
3.3 - 33 mm (5/32 - 1 5/16 in.)
When converted to a 35 mm still camera
Camera/Memory (DCR-TRV17 only) mode:
42 - 420 mm (1 11/16 - 16 5/8 in.)
Color temperature
Auto, HOLD (Hold), Indoor (3 200 K), Outdoor (5 800 K)

Minimum illumination
5 lx (lux) (F 1.7)
0 lx (lux) (in the NightShot mode)*
* Objects unable to be seen due to the dark can be shot with infrared lighting.

Input/Output connectors

S video input/output
4-pin mini DIN
Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced
Chrominance signal: 0.286 Vp-p, 75 Ω (ohms)
Audio/Video input/output
AV MINI JACK, 1 Vp-p, 75 Ω (ohms), unbalanced, sync negative
327 mV, (at output impedance more than 47 kΩ (kilohms))
Output impedance with less than 2.2 kΩ (kilohms)/Stereo minijack (ø 3.5mm)
Input impedance more than 47 kΩ (kilohms)

DV input/output
4-pin connector
Headphone jack
Stereo minijack (ø 3.5 mm)
USB jack (DCR-TRV17 only)
mini-B
LANC jack
Stereo mini-minijack (ø 2.5 mm)
MIC jack
Stereo minijack (ø 3.5 mm)

LCD screen

Picture
DCR-TRV15:
6.2 cm (2.5 type)
50.3 × 37.4 mm (2 × 1 1/2 in.)
DCR-TRV17:
8.8 cm (3.5 type)
72.4 × 50.4 mm (2 7/8 × 2 in.)
Total dot number
123 200 (560 × 220)

— Continued on next page —

Mini DV Digital Video Cassette

DIGITAL VIDEO CAMERA RECORDER

SONY®

General

Power requirements
7.2 V (battery pack)
8.4 V (AC power adaptor)
Average power consumption (when using the battery pack)
During camera recording using LCD
DCR-TRV15: 3.3 W
DCR-TRV17: 3.7 W
Viewfinder
DCR-TRV15: 2.5 W
DCR-TRV17: 2.6 W
Operating temperature
0 °C to 40 °C (32 °F to 104 °F)
Storage temperature
–20 °C to +60 °C
(–4 °F to +140 °F)
Dimensions (Approx.)
74 × 95 × 175 mm
(2 7/8 × 3 3/4 × 6 1/2 in.)
(w/h/d)
Mass (approx.)
DCR-TRV15: 610 g (1 lb 5 oz)
DCR-TRV17: 650 g (1 lb 6 oz)
main unit only
DCR-TRV15: 700 g (1 lb 8 oz)
DCR-TRV17: 740 g (1 lb 10 oz)
including the battery pack NP-FM30, cassette DVM60, lens cap
Supplied accessories
See page 3.

AC power adaptor

Power requirements
100 - 240 V AC, 50/60 Hz
Power consumption
23 W
Output voltage
DC OUT: 8.4 V, 1.5 A in the operating mode
Operating temperature
0 °C to 40 °C (32 °F to 104 °F)
Storage temperature
–20 °C to +60 °C (–4 °F to +140 °F)
Dimensions (approx.)
125 × 39 × 62 mm
(5 × 1 9/16 × 2 1/2 in.) (w/h/d)
excluding projecting parts
Mass (approx.)
280 g (9.8 oz)
excluding mains lead
Cord length (approx.)
Power cord: 2 m (6.6 feet)
Connecting cord: 1.6 m (5.2 feet)

Battery pack

Maximum output voltage
DC 8.4 V
Output voltage
DC 7.2 V
Capacity
5.0 Wh (700 mAh)
Dimensions (approx.)
38.2 × 20.5 × 55.6 mm
(1 9/16 × 13/16 × 2 1/4 in.)
(w/h/d)
Mass (approx.)
65 g (2.3 oz)
Type
Lithium ion

"Memory Stick" (DCR-TRV17 only)

Memory
Flash memory
4MB: MSA-4A
Operating voltage
2.7-3.6V
Power consumption
Approx. 45mA in the operating mode
Approx. 130µA in the standby mode
Dimensions (approx.)
50 × 2.8 × 21.5 mm
(2 × 1/8 × 7/8 in.) (w/h/d)
Mass (approx.)
4 g (0.14 oz)

Design and specifications are subject to change without notice.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

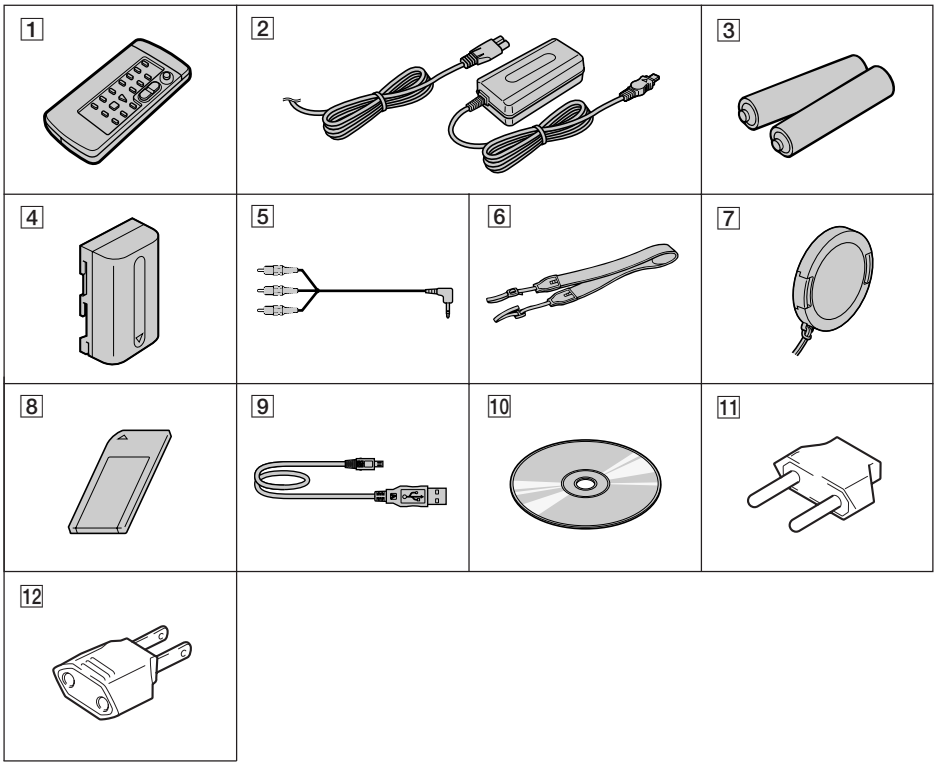
SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

• SUPPLIED ACCESSORIES

Check that the following accessories are supplied with your camcorder.



1 **Wireless Remote Commander** (1)

2 **AC power adaptor (AC-L10A)** (1), **Power cord** (1)

3 **Size AA (R6) battery for Remote Commander** (2)

4 **NP-FM30 battery pack** (1)

5 **A/V connecting cable** (1)

6 **Shoulder strap** (1)

7 **Lens cap** (1)

8 **"Memory Stick" (MSA-4A)** (1)
DCR-TRV17 only

9 **USB cable** (1)
DCR-TRV17 only

10 **CD-ROM (SPVD-004, USB Driver)** (1)
DCR-TRV17 only

11 **2-pin conversion adaptor** (1)
DCR-TRV15: JE / TRV17: JE only

12 **2-pin conversion adaptor** (1)
DCR-TRV15: E, HK / TRV17: E, HK only

• Abbreviation
HK : Hong Kong model
JE : Tourist model

Table for difference of functions

DCR	TRV15	TRV17	Remark
LCD size	2.5 inch	3.5 inch	
Memory stick	×	○	○: with MS-070 board
Intelligent accessory shoe	×	○ (P)	○ (P): Supports printer
DIGITAL IN/OUT (USB)	×	○	○: with MS-070 board

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6-1. EXPLODED VIEWS ····· 6-1
6-1-1. OVERALL SECTION ····· 6-1
6-1-2. CABINET (R) SECTION ····· 6-2
6-1-3. LCD SECTION ····· 6-3
6-1-4. CABINET (L) SECTION ····· 6-4
6-1-5. MAIN CHASSIS COMPLETE SECTION ····· 6-5
6-1-6. EVF SECTION ····· 6-6
6-1-7. OVERALL MECHANISM DECK SECTION (J100) ···· 6-7
6-1-8. LS CHASSIS BLOCK ASSEMBLY ····· 6-8
6-1-9. MECHANISM CHASSIS BLOCK ASSEMBLY ····· 6-9
6-2. ELECTRICAL PARTS LIST ····· 6-10

Parts list of the VC-260 board are not shown.
Pages from 6-17 to 6-26 are not shown.

* Optical axis frame and color reproduction frame are shown on pages 212 and 213.

1. POWER SUPPLY DURING REPAIRS

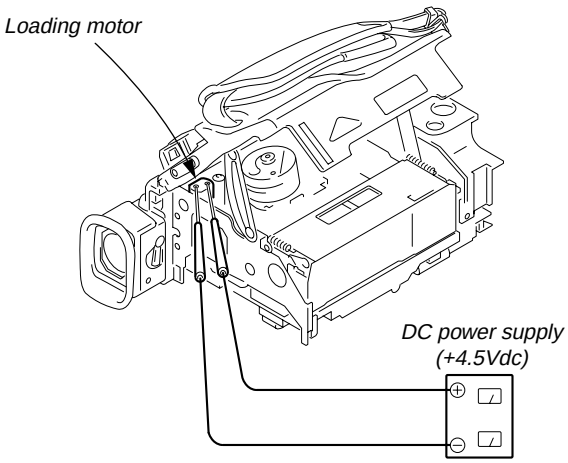
In this unit, about 10 seconds after power is supplied to the battery terminal using the regulated power supply (8.4V), the power is shut off so that the unit cannot operate.
This following two methods are available to prevent this. Take note of which to use during repairs.

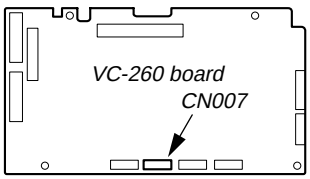
Method 1.
Use the AC power adaptor (AC-L10, AC-VQ800 etc.).

Method 2.
Connect the servicing remote commander RM-95 (J-6082-053-B) to the LANC jack, and set the commander switch to the “ADJ” side.

2. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

① Refer to 2-3 to remove the top cabinet assembly.
② Refer to 2-3 to remove the front panel assembly.
③ Refer to 2-4 to remove the cabinet (R) assembly.
④ Refer to 2-5 to remove the battery panel section.
⑤ Open the VC-260 board.
⑥ Disconnect CN007 (27P, 0.3mm) of VC-260 board.
⑦ Open the cassette lid.
⑧ Supply +4.5V from the DC power supply to the loading motor and unload with a pressing the cassette compartment.





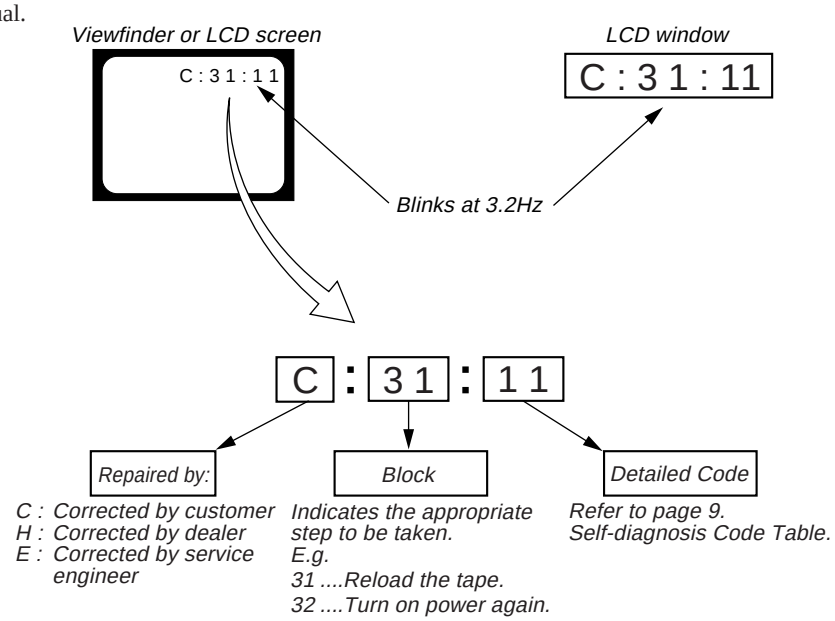
SELF-DIAGNOSIS FUNCTION

1. SELF-DIAGNOSIS FUNCTION

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder, LCD screen or LCD window what to do. This function consists of two display; self-diagnosis display and service mode display.
Details of the self-diagnosis functions are provided in the Instruction manual.

2. SELF-DIAGNOSIS DISPLAY

When problems occur while the unit is operating, the counter of the viewfinder, LCD screen or LCD window consists of an alphabet and 4-digit numbers, which blinks at 3.2 Hz. This 5-character display indicates the "repaired by:", "block" in which the problem occurred, and "detailed code" of the problem.

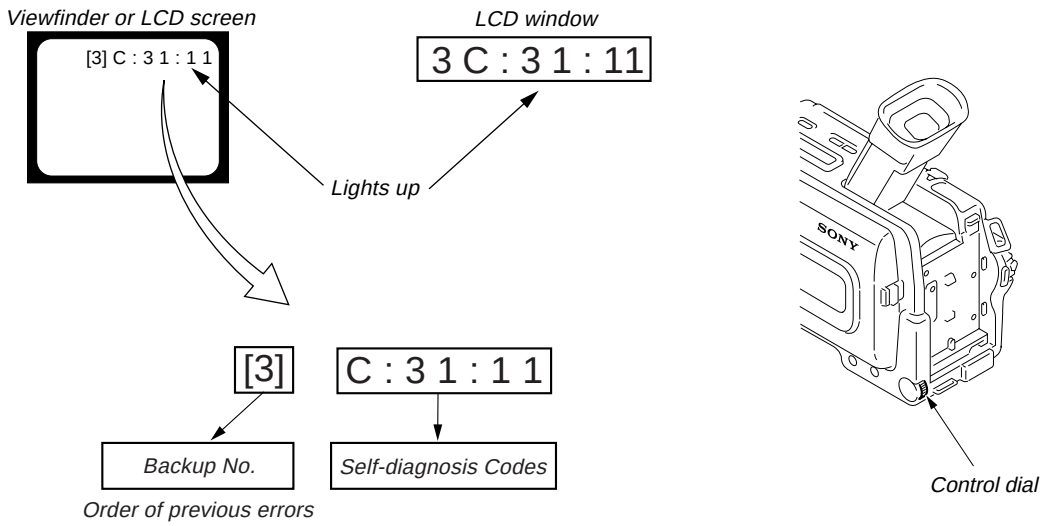

Viewfinder or LCD screen
C : 3 1 : 1 1
LCD window
C : 3 1 : 11
Blinks at 3.2Hz
C : 31 : 11
Repaired by:
Block
Detailed Code
C : Corrected by customer
H : Corrected by dealer
E : Corrected by service engineer
Indicates the appropriate step to be taken.
E.g.
31 ....Reload the tape.
32 ....Turn on power again.
Refer to page 9.
Self-diagnosis Code Table.

3. SERVICE MODE DISPLAY

The service mode display shows up to six self-diagnosis codes shown in the past.

3-1. Display Method

While pressing the "STOP" key, set the switch from OFF to "VCR", and continue pressing the "STOP" key for 5 seconds continuously. The service mode will be displayed, and the counter will show the backup No. and the 5-character self-diagnosis codes.



3-2. Switching of Backup No.

By rotating the control dial, past self-diagnosis codes will be shown in order. The backup No. in the [] indicates the order in which the problem occurred. (If the number of problems which occurred is less than 6, only the number of problems which occurred will be shown.)

[1] : Occurred first time
[2] : Occurred second time
[3] : Occurred third time
[4] : Occurred fourth time
[5] : Occurred fifth time
[6] : Occurred the last time

3-3. End of Display

Turning OFF the power supply will end the service mode display.

Note: The "self-diagnosis display" data will be backed up by the coin-type lithium battery of CK-101 board BT8301. When the cabinet (R) (CK-101 board) is removed, the "self-diagnosis display" data will be lost by initialization.

4. SELF-DIAGNOSIS CODE TABLE

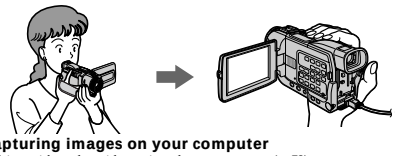
Self-diagnosis Code					Symptom/State	Correction
Repaired by:	Block Function		Detailed Code			
C	0	4	0	0	Non-standard battery is used.	Use the info LITHIUM battery.
C	2	1	0	0	Condensation.	Remove the cassette, and insert it again after one hour.
C	2	2	0	0	Video head is dirty.	Clean with the optional cleaning cassette.
C	3	1	1	0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	1	1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	2	0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2	1	Winding S reel fault when counting the rest of tape.	Load the tape again, and perform operations from the beginning.
C	3	1	2	2	T reel fault.	Load the tape again, and perform operations from the beginning.
C	3	1	2	3	S reel fault.	Load the tape again, and perform operations from the beginning.
C	3	1	2	4	T reel fault.	Load the tape again, and perform operations from the beginning.
C	3	1	3	0	FG fault when starting capstan.	Load the tape again, and perform operations from the beginning.
C	3	1	4	0	FG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3	1	4	2	FG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3	2	1	0	LOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	1	1	UNLOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	1	Winding S reel fault when counting the rest of tape.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	2	T reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	3	S reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	4	T reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	0	FG fault when starting capstan.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	0	FG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	2	FG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
E	6	1	0	0	Difficult to adjust focus (Cannot initialize focus.)	Inspect the lens block focus reset sensor (Pin ⑦ of CN004 of VC-260 board) when focusing is performed when the focus ring is rotated in the focus manual mode, and the focus motor drive circuit (IC204 of VC-260 board) when the focusing is not performed.
E	6	1	1	0	Zoom operations fault (Cannot initialize zoom lens.)	Inspect the lens block zoom reset sensor (Pin ⑯ of CN004 of VC-260 board) when zooming is performed when the zoom lens is operated and the zoom motor drive circuit (IC204 of VC-260 board) when zooming is not performed.
E	6	2	0	0	Steadyshot function does not work well. (With pitch angular velocity sensor output stopped.)	Inspect pitch angular velocity sensor (SE3102 of JK-204 board) peripheral circuits.
E	6	2	0	1	Steadyshot function does not work well. (With yaw angular velocity sensor output stopped.)	Inspect yaw angular velocity sensor (SE3101 of JK-204 board) peripheral circuits.

SECTION 1
GENERAL

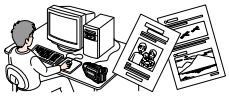
This section is extracted from instruction manual.

Main Features

Taking moving or still images, and playing them back
- Recording a picture (p. 21)
- Recording a still image on a tape (p. 38)
- Playing back a tape (p. 31)
- Recording still images on "Memory Stick"s (p. 112) (DCR-TRV17 only)
- Recording moving pictures on "Memory Stick"s (p. 120) (DCR-TRV17 only)
- Viewing a still image recorded on "Memory Stick" (p. 129) (DCR-TRV17 only)
- Viewing a moving picture recorded on "Memory Stick" (p. 132) (DCR-TRV17 only)



Capturing images on your computer
- Using with analog video unit and your computer (p. 79)
- Viewing images recorded on "Memory Stick" using USB cable (p. 134) (DCR-TRV17 only)



Other uses

Functions to adjust exposure in the recording mode
- Back light (p. 26)
- NightShot / Super NightShot (p. 27)
- PROGRAM AE (p. 49)
- Adjusting the exposure manually (p. 52)

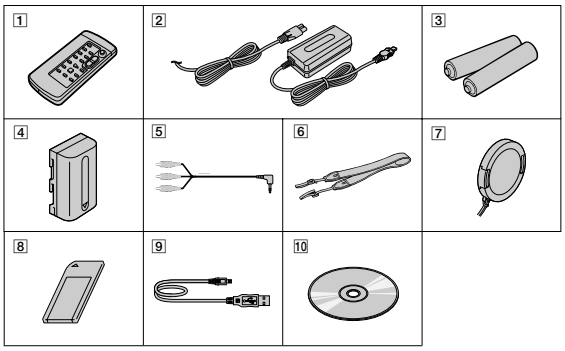
Functions to give images more impact
- Digital zoom (p. 24) The default setting is set to **OFF**. (To zoom greater than 10×, select the digital zoom power in **D ZOOM** in the menu settings.)
- Fader (p. 43)
- Picture effect (p. 45)
- Digital effect (p. 46)
- Digital program editing (p. 68)
- Title (p. 89, 92)
- MEMORY MIX (p. 124) (DCR-TRV17 only)

Functions to give a natural appearance to your recordings
- Landscape mode (p. 49)
- Sports lesson mode (p. 49)
- Manual focus (p. 53)

Functions to use after recording
- END SEARCH / EDITSEARCH / Rec review (p. 30)
- DATA CODE (p. 32)
- SUPER LASER LINK (p. 36)
- Tape PB ZOOM (p. 59) / Memory PB ZOOM (p. 140) (DCR-TRV17 only)
- Zero set memory (p. 60, 83)
- Title search (p. 61)
- HiFi SOUND (p. 98)

Checking supplied accessories

Make sure that the following accessories are supplied with your camcorder.



1 **Wireless Remote Commander** (1) (p. 178)
2 **AC-L10A/L10B/L10C AC power adaptor** (1), **Power cord** (1) (p. 13)
3 **Size AA (R6) battery for Remote Commander** (2) (p. 178)
4 **NP-FM30 battery pack** (1) (p. 12, 13)
5 **A/V connecting cable** (1) (p. 35, 66)
6 **Shoulder strap** (1) (p. 173)
7 **Lens cap** (1) (p. 21)
8 **"Memory Stick"** (1) (p. 103) DCR-TRV17 only
9 **USB cable** (1) (p. 135) DCR-TRV17 only
10 **CD-ROM (SPVD-004, USB Driver)** (1) (p. 135) DCR-TRV17 only

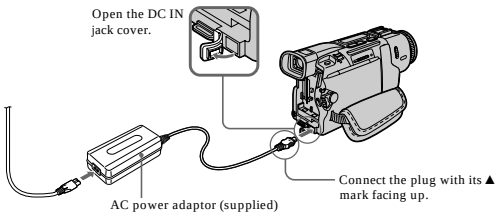
Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, storage media, etc.

Quick Start Guide

This chapter introduces you to the basic features of your camcorder. See the page in parentheses "( )" for more information.

1 Connecting the power cord (p. 17)

Use the battery pack when using your camcorder outdoors (p. 12).

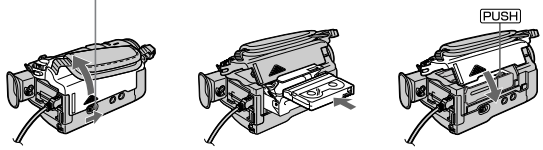


2 Inserting a cassette (p. 20)

1 Slide OPEN / EJECT in the direction of the arrow and open the lid.

2 Push the middle portion of the back of the cassette to insert. Insert the cassette in a straight line deeply into the cassette compartment with the window facing out.

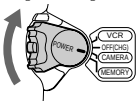
3 Close the cassette compartment by pressing the PUSH mark on the cassette compartment. After the cassette compartment going down completely, close the lid until it clicks.

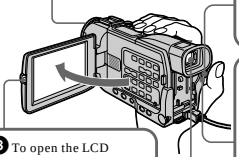


3 Recording a picture (p. 21)

1 Remove the lens cap.

2 Set the POWER switch to CAMERA while pressing the small green button.





3 To open the LCD panel, press OPEN. The picture appears on the screen.

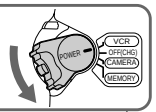
4 Press START / STOP. Your camcorder starts recording. To stop recording, press START / STOP again.

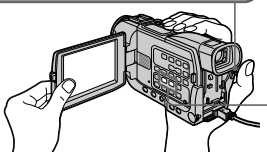
Viewfinder
When the LCD panel is closed, use the viewfinder placing your eye against its eyecup.

When you purchase your camcorder, the clock setting is set to off. If you want to record the date and time for a picture, set the clock setting before recording (p. 18).

4 Monitoring the playback picture on the LCD screen (p. 31)

1 Set the POWER switch to VCR while pressing the small green button.

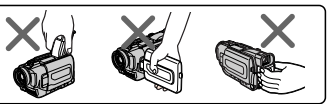




2 Press ◄◄ to rewind the tape.

3 Press ► to start playback.

NOTE
Do not pick up your camcorder by holding the viewfinder, the LCD panel, or the battery pack.



Using this manual

The instructions in this manual are for the two models listed in the table below. Before you start reading this manual and operating your camcorder, check the model number by looking at the bottom of your camcorder. The DCR-TRV17 is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "DCR-TRV17 only".

As you read through this manual, buttons and settings on your camcorder are shown in capital letters.

e.g. Set the POWER switch to CAMERA.
When you carry out an operation, you can hear a beep sound to indicate that the operation is being carried out.

Types of differences

DCR-	TRV15	TRV17
MEMORY mark*1) (on the POWER switch)	—	●
Ψ (USB) jack	—	●
Intelligent accessory shoe	8 pin	15 pin*2)

● Provided
— Not provided

*1) The model with MEMORY marked on the POWER switch is provided with memory functions. See page 106 for details.
*2) This intelligent accessory shoe is designed to use a printer (optional) (p. 148).

Note on Cassette Memory

Your camcorder is based on the DV format. You can only use mini DV cassettes with your camcorder. We recommend that you use a tape with cassette memory CM.

The functions which require different operations depending on whether the tape has the cassette memory or not are:
- End search (p. 30)
- Date search (p. 62)
- Photo search (p. 64)

The functions you can operate only with the cassette memory are:
- Title search (p. 61)
- Superimposing a title (p. 89)
- Making your own titles (p. 92)
- Labeling a cassette (p. 94)

For details, see page 158.

CM only You see this mark in the introduction of the features that are operated only with cassette memory.

Tapes with cassette memory are marked by CM (Cassette Memory).

Note on TV color systems

TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system-based TV.

Copyright precautions

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

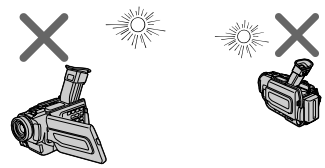
Precautions on camcorder care

Lens and LCD screen/finder (on mounted models only)

- **The LCD screen and the finder are manufactured using extremely high-precision technology so over 99.99 % of the pixels are operational for effective use. However, there may be some tiny black points and/or bright points (white, red, blue or green in color) that constantly appear on the LCD screen and the finder. These points are normal in the manufacturing process and do not affect the recording in any way.**
- Do not let your camcorder get wet. Keep your camcorder away from rain and sea water. Letting your camcorder get wet may cause your camcorder to malfunction. Sometimes this malfunction cannot be repaired **[a]**.
- Never leave your camcorder exposed to temperatures above 60 °C (140 °F), such as in a car parked in the sun or under direct sunlight **[b]**.
- Be careful when placing the camera near a window or outdoors. Exposing the LCD screen, the finder or the lens to direct sunlight for long periods may cause malfunctions **[c]**.
- Do not directly shoot the sun. Doing so might cause your camcorder to malfunction. Take pictures of the sun in low light conditions such as dusk **[d]**.

[a] **[b]**

[c] **[d]**

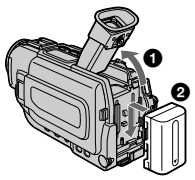


Step 1 Preparing the power supply

Installing the battery pack

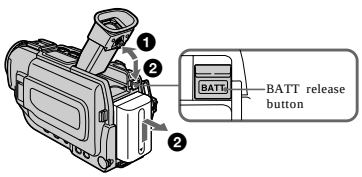
Install the battery pack to use your camcorder outdoors.

(1) Lift up the viewfinder.
(2) Slide the battery pack down until it clicks.

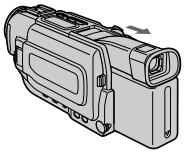


To remove the battery pack

(1) Lift up the viewfinder.
(2) Slide the battery pack out in the direction of the arrow while pressing BATT down.



If you use the large capacity battery pack
If you install the NP-FM70/FM90/FM91 battery pack on your camcorder, extend its viewfinder.

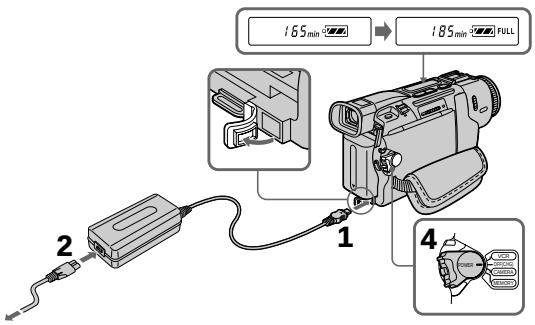


Charging the battery pack

Use the battery pack after charging it for your camcorder.
Your camcorder operates only with the "InfoLITHIUM" battery pack (M series).
See page 160 for details of "InfoLITHIUM" battery pack.

(1) Open the DC IN jack cover and connect the AC power adaptor supplied with your camcorder to the DC IN jack on your camcorder with the plug's ▲ mark facing up.
(2) Connect the power cord to the AC power adaptor.
(3) Connect the power cord to the wall outlet.
(4) Set the POWER switch to OFF (CHG). Charging begins. The remaining battery time is indicated in minutes on the display window.

When the remaining battery indicator changes to , **normal charge** is completed. To fully charge the battery **(full charge)**, leave the battery pack attached for about one hour after normal charge is completed until FULL appears in the display window. Fully charging the battery allows you to use the battery longer than usual.



The number in the illustration of the display window may differ from that on your camcorder.

After charging the battery pack

Disconnect the AC power adaptor from the DC IN jack on your camcorder.

Note
Prevent metallic objects from coming into contact with the metal parts of the DC plug of the AC power adaptor. This may cause a short-circuit, damaging the AC power adaptor.

When the battery pack is charged fully
"FULL" appears in the display window.

Remaining battery time indicator
The remaining battery time you record with the viewfinder is displayed.
The remaining battery time indicator in the display window indicates the approximate recording time with the viewfinder.

Until your camcorder calculates the actual remaining battery time
"– – – min" appears in the display window.

Charging time

Battery pack	Full charge (Normal charge)
NP-FM30 (supplied)	145 (85)
NP-FM50	150 (90)
NP-FM70	240 (180)
NP-FM90	330 (270)
NP-FM91	360 (300)

Approximate minutes to charge an empty battery pack at 25 °C (77 °F).

Recording time

DCR-TRV15

Battery pack	Recording with the viewfinder		Recording with the LCD screen	
	Continuous*	Typical**	Continuous*	Typical**
NP-FM30 (supplied)	125	65	90	45
NP-FM50	200	110	150	75
NP-FM70	415	225	310	165
NP-FM90	630	345	475	255
NP-FM91	725	395	550	290

DCR-TRV17

Battery pack	Recording with the viewfinder		Recording with the LCD screen	
	Continuous*	Typical**	Continuous*	Typical**
NP-FM30 (supplied)	120	60	80	40
NP-FM50	195	105	135	65
NP-FM70	400	220	275	145
NP-FM90	600	330	425	225
NP-FM91	695	380	490	255

Approximate minutes when you use a fully charged battery

* Approximate continuous recording time at 25 °C (77 °F). The battery life will be shorter if you use your camcorder in a cold environment.
** Approximate number of minutes when recording while you repeat recording start / stop, zooming and turning the power on / off. The actual battery life may be shorter.

Playing time

DCR-TRV15

Battery pack	Playing time on LCD screen	Playing time with LCD closed
NP-FM30 (supplied)	100	135
NP-FM50	160	220
NP-FM70	335	450
NP-FM90	505	685
NP-FM91	585	785

DCR-TRV17

Battery pack	Playing time on LCD screen	Playing time with LCD closed
NP-FM30 (supplied)	85	130
NP-FM50	140	210
NP-FM70	295	430
NP-FM90	450	655
NP-FM91	520	755

Approximate minutes when you use a fully charged battery

Approximate minutes when playing back at 25 °C (77 °F). The battery life will be shorter if you use your camcorder in a cold environment.

The recording and playing times of a normally charged battery are about 90% of those of a fully charged battery.

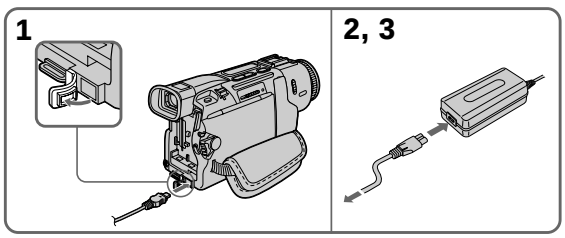
If the power goes off although the battery remaining indicator indicates that the battery pack has enough power to operate
Charge the battery pack fully again so that the indication on the battery remaining indicator is correct.

What is "InfoLITHIUM"?
The "InfoLITHIUM" is a lithium ion battery pack which can exchange data such as battery consumption with compatible electronic equipment. This unit is compatible with the "InfoLITHIUM" battery pack (M series). Your camcorder operates only with the "InfoLITHIUM" battery. "InfoLITHIUM" M series battery packs have the mark.
"InfoLITHIUM" is a trademark of Sony Corporation.
We recommend charging the battery pack in an ambient temperature of between 10 °C to 30 °C (50 °F to 86 °F).

Connecting to a wall outlet

When you use your camcorder for a long time, we recommend that you power it from a wall outlet using the AC power adaptor.

(1) Open the DC IN jack cover, pulling the cover out a little and rotating it. Connect the AC power adaptor supplied with your camcorder to the DC IN jack on your camcorder with the plug's ▲ mark facing up.
(2) Connect the power cord to the AC power adaptor.
(3) Connect the power cord to a wall outlet.



PRECAUTION
The set is not disconnected from the AC power source (wall outlet) as long as it is connected to the wall outlet, even if the set itself has been turned off.

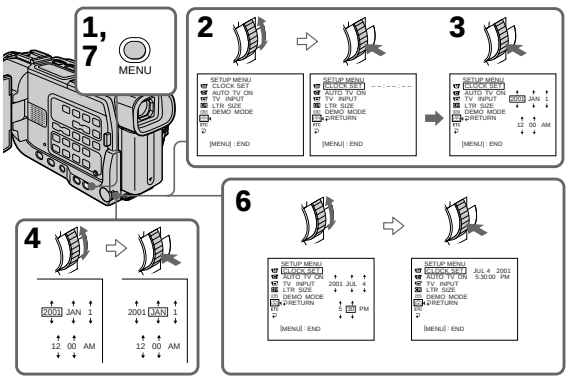
Notes
- Place the AC power adaptor near a wall outlet. While using the AC power adaptor, if any trouble occurs with this unit, disconnect the plug from the wall outlet as soon as possible to cut off the power.
- The AC power adaptor can supply power even if the battery pack is attached to your camcorder.
- The DC IN jack has "source priority." This means that the battery pack cannot supply any power if the power cord is connected to the DC IN jack, even when the power cord is not plugged into a wall outlet.

Using a car battery
Use Sony DC Adaptor / Charger (optional). Refer to the operating instractions of the DC Adaptor / Charger for further information.

Step 2 Setting the date and time

Set the date and time settings when you use your camcorder for the first time. “CLOCK SET” will be displayed each time that you set the POWER switch to CAMERA / MEMORY (DCR-TRV17 only) unless you set the date and time settings.
If you do not use your camcorder for about four months, the date and time settings may be released (bars may appear) because the built-in rechargeable battery in your camcorder will have been discharged (p. 166).
First, set the year, then the month, the day, the hour and then the minute.

(1) Set the POWER switch to CAMERA or MEMORY (DCR-TRV17 only), and then press MENU to display the menu settings.
(2) Turn the SEL / PUSH EXEC dial to select [CAM], then press the dial.
(3) Turn the SEL / PUSH EXEC dial to select CLOCK SET, then press the dial.
(4) Turn the SEL / PUSH EXEC dial to adjust the desired year, then press the dial.
(5) Set the month, day and hour by turning the SEL / PUSH EXEC dial and pressing the dial.
(6) Set the minute by turning the SEL / PUSH EXEC dial and pressing the dial by the time signal. The clock starts to move.
(7) Press MENU to make the menu settings disappear.



The year changes as follows:

1995 ← · · · · → 2001 ← · · · · → 2079

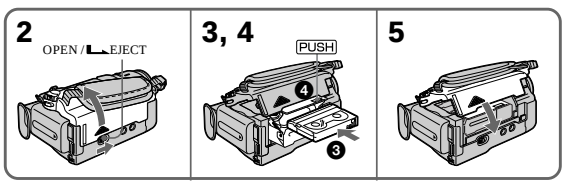
Step 2 Setting the date and time

If you do not set the date and time
“– –:– –:– –” is recorded on the data code of the tape and the “Memory Stick” (DCR-TRV17 only).

Note on the time indicator
The internal clock of your camcorder operates on a 12-hour cycle.
• 12:00 AM stands for midnight.
• 12:00 PM stands for noon.

Step 3 Inserting a cassette

(1) Install the power source.
(2) Slide OPEN / EJECT in the direction of the arrow and open the lid. The cassette compartment automatically lifts up and opens.
(3) Push the middle portion of the back of the cassette to insert.
Insert the cassette in a straight line deeply into the cassette compartment with the window facing out.
(4) Close the cassette compartment by pressing the [PUSH] mark on the cassette compartment. The cassette compartment automatically goes down.
(5) After the cassette compartment going down completely, close the lid until it clicks.

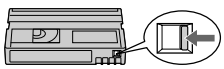


To eject a cassette
Follow the procedure above, and take out the cassette in step 3.

Note
Do not press the cassette compartment down forcibly. Doing so may cause a malfunction.
The cassette compartment may not be closed when you press any part of the lid other than the [PUSH] mark.

When you use cassette with cassette memory
Read the instruction about cassette memory to use this function properly (p. 158).

To prevent accidental erasure
Slide the write-protect tab on the cassette to expose the red mark.



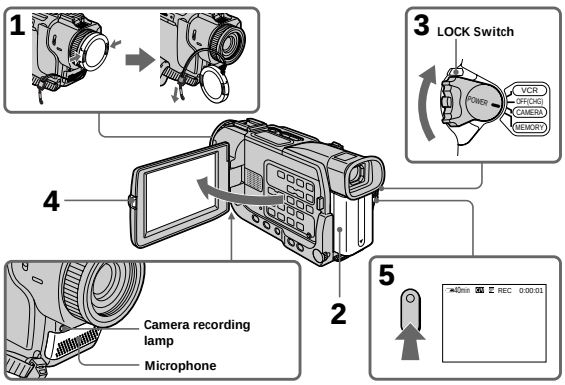
When ejecting a cassette
Do not press EDITSEARCH.

— Recording – Basics —

Recording a picture

Your camcorder automatically focuses for you.

(1) Remove the lens cap by pressing both knobs on its sides and attatch the lens cap to the grip strap.
(2) Install the power source and insert a cassette. See “Step 1” to “Step 3” for more information (p. 12 to p. 20).
(3) Set the POWER switch to CAMERA while pressing the small green button.
Your camcorder is set to the standby mode.
(4) To open the LCD panel, press OPEN. The viewfinder automatically turns off.
(5) Press START / STOP. Your camcorder starts recording. The REC indicator appears. The camera recording lamp located on the front of your camcorder lights up. To stop recording, press START / STOP again.



Notes
• Fasten the grip strap firmly.
• Do not touch the built-in microphone during recording.

Note on Recording mode
Your camcorder records and plays back in the SP (standard play) mode and in the LP (long play) mode. Select SP or LP in the menu settings. In the LP mode, you can record 1.5 times as long as in the SP mode.
When you record a tape in the LP mode on your camcorder, we recommend playing the tape on your camcorder.

Note on the LOCK switch (DCR-TRV17 only)
When you slide the LOCK switch to the right, the POWER switch can no longer be set to MEMORY accidentally. LOCK switch is set to the left before your camcorder leaves the factory.

To enable smooth transition
Transition between the last scene you recorded and the next scene is smooth as long as you do not eject the cassette even if you turn off your camcorder.
However, check the following:
- Do not mix recordings in the SP mode and ones in the LP mode on one tape.
- When you change the battery pack, set the POWER switch to OFF (CHG).
- When you use a tape with cassette memory, however, you can make the transition smooth even after ejecting the cassette if you use the END SEARCH function (p. 30).

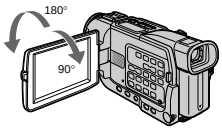
If you leave your camcorder in the standby mode for five minutes while the cassette is inserted
Your camcorder automatically turns off. This is to save battery power and to prevent battery and tape wear. To resume the standby mode, set the POWER switch to OFF (CHG), and to CAMERA again.

When you record in the SP and LP modes on one tape or you record some scenes in the LP mode
The playback picture may be distorted or the time code may not be written properly between scenes.

Recording data
The recording date (date/time or various settings when recorded) are not displayed while recording. However, they are recorded automatically onto tape. To display the recording date and time, press DATA CODE on the Remote Commander during playback.

Adjusting the LCD screen

The LCD panel moves about 90 degrees to the viewfinder side and about 180 degrees to the lens side.
If you turn the LCD panel over so that it faces the other way, the indicator appears on the LCD screen and in the viewfinder **(Mirror mode)**.



When closing the LCD panel, set it vertically until it clicks, and swing it into the camcorder body.

Note
When using the LCD screen except in the mirror mode, the viewfinder automatically turns off.

When you use the LCD screen outdoors in direct sunlight
The LCD screen may be difficult to see. If this happens, we recommend that you use the viewfinder.

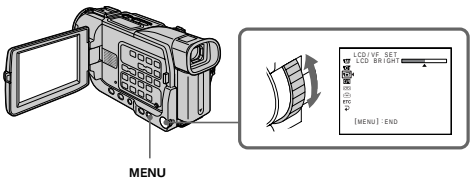
Picture in the mirror mode
The picture on the LCD screen is a mirror-image. However, the picture will be normal when recorded.

During recording in the mirror mode
ZERO SET MEMORY on the Remote Commander does not work.

Indicators in the mirror mode
The STBY indicator appears as ❚❚● and REC as ●. Some of the other indicators appear mirror-reversed and others are not displayed.

Adjusting the brightness of the LCD screen

Adjust the brightness of the LCD screen with LCD BRIGHT in in the menu settings (p. 98).



LCD screen backlight
You can change the brightness of the backlight. Select LCD B.L. in the menu settings (p. 98).

Even if you adjust the LCD screen backlight or brightness of the LCD screen
The recorded picture will not be affected.

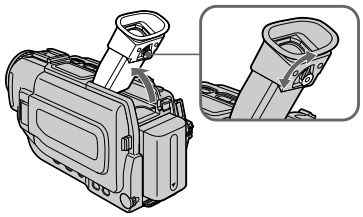
After recording

(1) Set the POWER switch to OFF (CHG).
(2) Close the LCD panel.
(3) Eject the cassette.

Adjusting the viewfinder

If you record pictures with the LCD panel closed, check the picture with the viewfinder. Adjust the viewfinder lens to your eyesight so that the indicators in the viewfinder come into sharp focus.

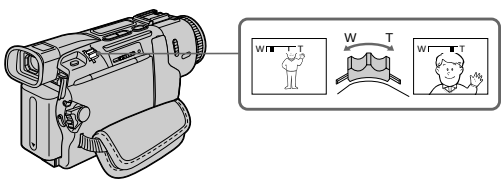
Lift up the viewfinder and move the viewfinder lens adjustment lever.



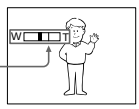
Viewfinder backlight
You can change the brightness of the backlight. Select VF B.L. in the menu settings. (p. 98)

Using the zoom feature

Move the power zoom lever a little for a slower zoom. Move it further for a faster zoom. Using the zoom function sparingly results in better-looking recordings.
"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears farther away)



To use zoom greater than 10×
Zoom greater than 10× is performed digitally. To activate digital zoom, select the digital power in D ZOOM in the menu settings (p. 97). The digital zoom function is set to OFF as a default settings. (p. 97)



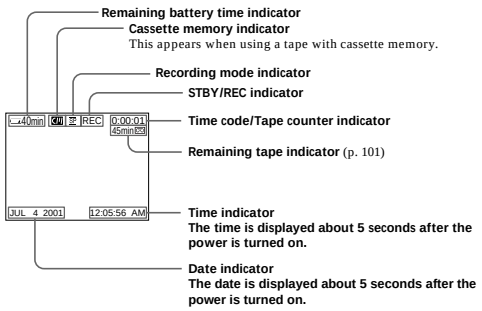
The right side of the bar shows the digital zooming zone.
The digital zooming zone appears when you select the digital power in the menu settings (p. 97).

When you shoot close to a subject
If you cannot get a sharp focus, move the power zoom lever to the "W" side until the focus is sharp. You can shoot a subject that is at least about 80 cm (about 2 feet 5/8 inch) away from the lens surface in the telephoto position, or about 1 cm (about 1/2 inch) away in the wide-angle position.

Notes on digital zoom
- Digital zoom starts to function when zoom exceeds 10×.
- The picture quality deteriorates as you move the power zoom lever toward the "T" side.
- You cannot use the digital zoom when the POWER switch is set to MEMORY (DCR-TRV17 only).

Indicators displayed in the recording mode

The indicators are not recorded on tapes.


Remaining battery time indicator
Cassette memory indicator
This appears when using a tape with cassette memory.
Recording mode indicator
STBY/REC indicator
Time code/Tape counter indicator
Remaining tape indicator (p. 101)
Time indicator
The time is displayed about 5 seconds after the power is turned on.
Date indicator
The date is displayed about 5 seconds after the power is turned on.
REC
0:00:01
45min
JUL 4 2001
12:05:56 AM

Remaining battery time indicator
The remaining battery time indicator roughly indicates the recording time. The indicator may not be correct, depending on the conditions in which you are recording. When you close the LCD panel and open it again, it takes about one minute for the correct remaining battery time in minutes to be displayed.

Time code
The time code indicates the recording or playback time, "0:00:00" (hours : minutes : seconds) in CAMERA mode and "0:00:00:00" (hours : minutes : seconds : frames) in VCR mode. You cannot rewrite only the time code.

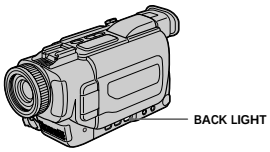
Remaining tape indicator
The indicator may not be displayed accurately depending on the tape.

Recording data
The recording data (date / time or various settings when recorded) are not displayed while recording. However, they are recorded automatically onto tape. To display the recording date and time, press DATA CODE on the Remote Commander during playback.

Shooting backlit subjects – BACK LIGHT

When you shoot a subject with the light source behind the subject or a subject with a light background, use the backlight function.

In CAMERA or MEMORY (DCR-TRV17 only) mode, press BACK LIGHT.
The indicator appears on the screen.
To cancel, press BACK LIGHT again.

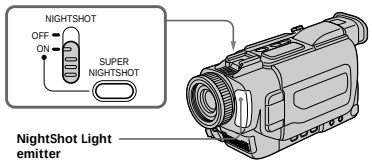


If you press EXPOSURE when shooting backlit subjects
The backlight function will be canceled.

Shooting in the dark – NightShot/Super NightShot

The NightShot function enables you to shoot a subject in a dark place. For example, you can satisfactorily record the environment of nocturnal animals for observation when you use this function.

In CAMERA or MEMORY (DCR-TRV17 only) mode, slide NIGHTSHOT to ON.
and "NIGHTSHOT" indicators flash on the screen. To cancel the NightShot function, slide NIGHTSHOT to OFF.



Using Super NightShot

The Super NightShot mode makes subjects more than 16 times brighter than those recorded in the NightShot mode.

(1) In CAMERA mode, slide NIGHTSHOT to ON. indicator flashes on the screen.
(2) Press SUPER NIGHTSHOT. The indicator and "SUPER NIGHTSHOT" flash on the screen.
To cancel the Super NightShot mode, press SUPER NIGHTSHOT.

Using the NightShot Light

The picture will be clearer with the NightShot Light on. To enable the NightShot Light, set N.S. LIGHT to ON in the menu settings (p. 97).

Notes
- Do not use the NightShot function in bright places (ex. the outdoors in the daytime). This may cause your camcorder to malfunction.
- When you keep NIGHTSHOT set to ON in normal recording, the picture may be recorded in incorrect or unnatural colors.
- If focusing is difficult with the autofocus mode when using the NightShot function, focus manually.

While using the NightShot function, you cannot use the following functions:
– Exposure
– PROGRAM AE
– White balance

While using the Super NightShot function
The shutter speed is automatically adjusted depending on the brightness. At that time, the moving picture may be slow down.

While using the Super NightShot function, you cannot use the following functions:
– Exposure
– PROGRAM AE
– Fader
– Digital effect
– White balance

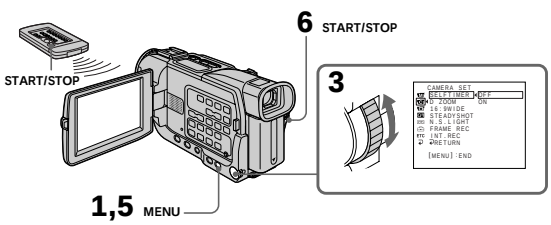
While in MEMORY mode (DCR-TRV17 only)
You cannot use the Super NightShot function.

NightShot Light
NightShot Light rays are infrared and so are invisible. The maximum shooting distance using the NightShot Light is about 3 m (10 feet).

Self-timer recording

Recording with the self-timer starts in 10 seconds automatically. You can also use the Remote Commander for this operation.

(1) Press MENU to display the menu settings in the standby mode.
(2) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(3) Turn the SEL / PUSH EXEC dial to select SELFTIMER, then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select ON, then press the dial.
(5) Press MENU to make the menu settings disappear.
(6) Press START / STOP.
Self-timer starts counting down from 10 with a beep sound. In the last two seconds of the countdown, the beep sound gets faster, then recording starts automatically. To stop recording, press START / STOP again.



To stop the countdown

Press START / STOP.
To restart the countdown, press START / STOP again.

To record still images using the self-timer

Press PHOTO in step 6. (p. 39)

To cancel self-timer recording

Set SELFTIMER to OFF in the menu settings in the standby mode.

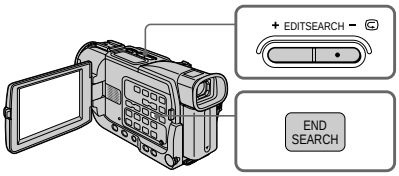
Note
The self-timer recording mode is automatically cancelled when:
– Self-timer recording is finished.
– The POWER switch is set to OFF (CHG) or VCR.

Self-timer memory photo recording (DCR-TRV17 only)
You can also record still images on "Memory Stick"s with the self-timer (p. 116).

Checking the recording

– END SEARCH / EDITSEARCH / Rec Review

You can use these buttons to check the recorded picture or shoot so that the transition between the last recorded scene and the next scene you record is smooth.



END SEARCH

You can go to the end of the recorded section after you record.

Press END SEARCH in the standby mode.
The last five seconds of the recorded section are played back and your camcorder returns to the standby mode. You can monitor the sound from the speaker or headphones.

EDITSEARCH

You can search for the next recording start point.

Hold down the + / – side of EDITSEARCH in the standby mode. The recorded section is played back.
+ : to go forward
– : to go backward
Release EDITSEARCH to stop playback. If you press START / STOP, re-recording begins from the point you released EDITSEARCH. You cannot monitor the sound.

Rec Review

You can check the last recorded section.

Press the – side of EDITSEARCH momentarily in the standby mode.
The section you have stopped most recently will be played back for a few seconds, and then your camcorder will return to the standby mode. You can monitor the sound from the speaker or headphones.

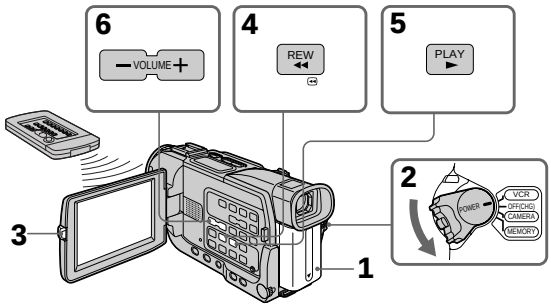
End search function
When you use a tape without cassette memory, the end search function does not work once you eject the cassette after you have recorded on the tape. If you use a tape with cassette memory, the end search function works even once you eject the cassette.

If a tape has a blank portion in the recorded portions
The end search function may not work correctly.

Playing back a tape

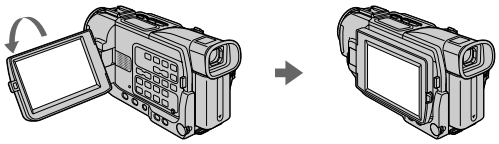
You can monitor the playback picture on the screen. If you close the LCD panel, you can monitor the playback picture in the viewfinder. You can control playback using the Remote Commander supplied with your camcorder.

(1) Install the power source and insert the recorded tape.
(2) Set the POWER switch to VCR while pressing the small green button.
(3) To open the LCD panel, press OPEN.
(4) Press ◄◄ to rewind the tape.
(5) Press ► to start playback.
(6) To adjust the volume, press either of the two buttons on VOLUME. The speaker on your camcorder is silent when the LCD panel is closed.



To stop playback
Press ■.

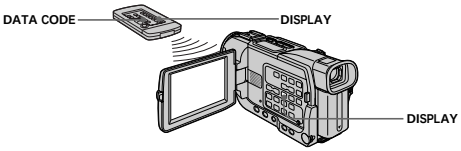
When monitoring on the LCD screen
You can turn the LCD panel over and move it back to the camcorder body with the LCD screen facing out.



When you open or close the LCD panel
Make sure that the LCD panel is set vertically.

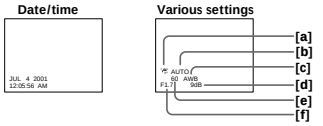
To display the screen indicators – Display function

Press DISPLAY on your camcorder or the Remote Commander supplied with your camcorder.
The indicators appear on the LCD screen.
To make the indicators disappear, press DISPLAY again.



Using the data code function
Your camcorder automatically records not only images on the tape but also the recording data (date / time or various settings when recorded) **(Data code)**.
Use the Remote Commander for this operation.

Press DATA CODE on the Remote Commander in the playback mode.
The display changes as follows:
date / time → various settings (SteadyShot, white balance, gain, shutter speed, aperture value, exposure mode) → no indicator



[a] SteadyShot off indicator
[b] Exposure mode indicator
[c] White balance indicator
[d] Gain indicator
[e] Shutter speed indicator
[f] Aperture value

Not to display various settings
Set DATA CODE to DATE in the menu settings (p. 102).
The display changes as follows:
date / time ←→ no indicator

Recording data
Recording data is your camcorder's information when you have recorded. In the recording mode, the recording data will not be displayed.

When you use the data code function, bars (-- -- --) appear if:
• A blank portion of the tape is being played back.
• The tape is unreadable due to tape damage or noise.
• The tape was recorded by a camcorder without the date and time set.

Data code
The data code is displayed on the TV screen if you connect your camcorder to the TV.

Remaining battery time indicator during playback
The indicator indicates the approximate continuous playback time.
The indicator may not be correct, depending on the conditions in which you are playing back. When you close the LCD panel and open it again, it takes about 1 minute for the correct remaining battery time to be displayed.

Various playback modes

To operate video control buttons, set the POWER switch to VCR.

To view a still picture (playback pause)
Press ❚❚ during playback. To resume normal playback, press ► or ❚❚.

To advance the tape
Press ►► in the stop mode. To resume normal playback, press ►.

To rewind the tape
Press ◄◄ in the stop mode. To resume normal playback, press ►.

To change the playback direction
Press < on the Remote Commander during playback to reverse the playback direction. To resume normal playback, press ►.

To locate a scene monitoring the picture (picture search)
Keep pressing ◄◄ or ►► during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing or rewinding the tape (skip scan)
Keep pressing ◄◄ while rewinding or ►► while advancing the tape. To resume rewinding or advancing, release the button.

To view the picture at slow speed (slow playback)
Press ❚► on the Remote Commander during playback. For slow playback in the reverse direction, press <, then press ❚► on the Remote Commander. To resume normal playback, press ►.

To view the picture at double speed
Press ×2 on the Remote Commander during playback. For double speed playback in the reverse direction, press <, then press ×2 on the Remote Commander. To resume normal playback, press ►.

To view the picture frame-by-frame

Press II► on the Remote Commander in the playback pause mode. For frame-by-frame playback in the reverse direction, press ◄II. To resume normal playback, press ►.

To search the last scene recorded (END SEARCH)

Press END SEARCH in the stop mode. The last five seconds of the recorded portion plays back and stops.

In the various playback modes

- Sound is muted.
- The previous picture may remain as a mosaic image during playback.

When the playback pause mode lasts for five minutes

Your camcorder automatically enters the stop mode. To resume playback, press ►.

Slow playback

The slow playback can be performed smoothly on your camcorder: however, this function does not work for an output signal through the i DV IN / OUT jack.

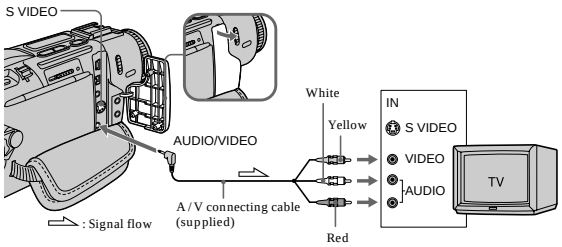
When you play back a tape in reverse

Horizontal noise may appear at the center, or the top and bottom of the screen. This is not a malfunction.

Viewing the recording on TV

Connect your camcorder to your TV with the A / V connecting cable supplied with your camcorder to watch the playback picture on the TV screen. You can operate the video control buttons in the same way as when you monitor playback pictures on the screen. When monitoring the playback picture on the TV screen, we recommend that you power your camcorder from a wall outlet using the AC power adaptor (p. 17). Refer to the operating instructions of your TV.

Open the jack cover. Connect your camcorder to the TV using the A / V connecting cable supplied with your camcorder. Then, set the TV / VCR selector on the TV to VCR.



If your TV is already connected to a VCR

Connect your camcorder to the LINE IN input on the VCR by using the A / V connecting cable supplied with your camcorder. Set the input selector on the VCR to LINE.

If your TV or VCR is a monaural type

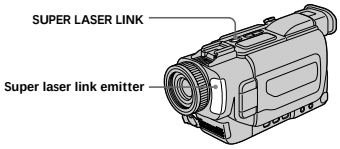
Connect the yellow plug of the A / V connecting cable to the video input jack and the white or the red plug to the audio input jack on the VCR or the TV. If you connect the white plug, the sound is L (left) signal. If you connect the red plug, the sound is R (right) signal.

If your TV or VCR has an S video jack

Connect using an S video cable (optional) to obtain high-quality pictures. With this connection, you do not need to connect the yellow (video) plug of the A / V connecting cable.
Connect the S video cable (optional) to the S video jacks on both your camcorder and the TV or the VCR.
This connection produces higher quality DV format pictures.

Using the AV cordless IR receiver

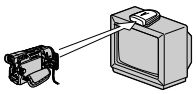
Once you connect the AV cordless IR receiver (optional) to your TV or VCR, you can easily view the picture on your TV. For details, refer to the operating instructions of the AV cordless IR receiver.



Before operation

Attach the power supply such as the AC power adaptor to your camcorder, and insert the recorded tape.

(1) After connecting your TV and AV cordless IR receiver, set the POWER switch on the AV cordless IR receiver to ON.
(2) Set the POWER switch to VCR.
(3) Turn the TV on and set the TV / VCR selector on the TV to VCR.
(4) Press SUPER LASER LINK. The lamp of SUPER LASER LINK lights up.
(5) Press ► on your camcorder to start playback.
(6) Point the super laser link emitter at the AV cordless IR receiver. Adjust the position of your camcorder and the AV cordless IR receiver to obtain clear playback pictures.



To cancel the super laser link function

Press SUPER LASER LINK again. The lamp on the SUPER LASER LINK button goes out.

If you turn the power off

The super laser link function turns off automatically.

If you use a Sony TV

- You can turn on the TV automatically when you press SUPER LASER LINK. To do so, make sure you:
  – Turn the TV's main switch on.
  – Set AUTO TV ON to ON in the menu settings.
  – Point the super laser link emitter at the TV's remote sensor.
- You can switch the video input of the TV automatically to the one which the AV cordless IR receiver is connected. To do so, set AUTO TV ON to ON and TV INPUT to the same video input (1, 2, 3) in the menu settings. With some models, however, the picture and sound may be disconnected momentarily when the video input is switched.
- The above feature may not work on some TV models.

When the super laser link function is activated (the SUPER LASER LINK button is lit)

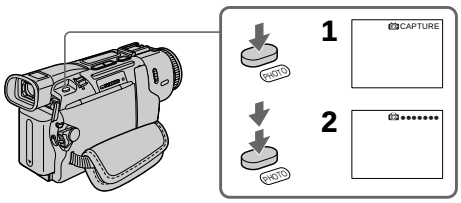
Your camcorder consumes power. Press SUPER LASER LINK to turn off the laser link function when it is not needed.

is a trademark of Sony Corporation.

Recording a still image on a tape – Tape Photo recording

You can record a still picture like a photograph. This mode is useful when you want to print a picture using a video printer (optional).
You can record about 510 pictures in the SP mode and about 765 pictures in the LP mode on a 60-minute tape.
Besides the operation described here, your camcorder can record still pictures on "Memory Stick"s (p. 112) (DCR-TRV17 only).

(1) In the standby mode, keep pressing PHOTO lightly until a still picture appears.
The CAPTURE indicator appears. Recording does not start yet.
To change the still picture, release PHOTO, select a still picture again, and then press and hold PHOTO lightly.
(2) Press PHOTO deeper.
The still picture on the screen is recorded for about seven seconds. The sound during those seven seconds is also recorded.
The still image is displayed on the screen until recording is completed.



Notes
- During tape photo recording, you cannot change the mode or setting.
- When recording a still picture, do not shake your camcorder. The picture may fluctuate.
- The PHOTO button does not work:
  – while the fader function is set or in use
  – while the digital effect function is set or in use

If you record a moving subject with the tape photo recording function
When you play back the still picture on other equipment, the picture may fluctuate.

To use the tape photo recording function using the Remote Commander
Press PHOTO on the Remote Commander. Your camcorder records a picture on the screen immediately.

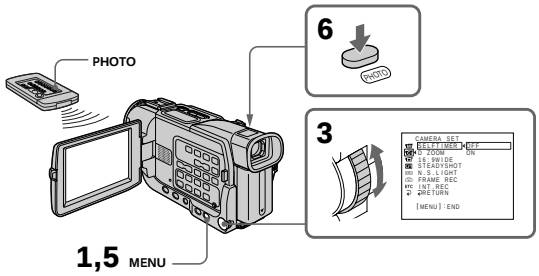
To use the tape photo recording function during normal CAMERA recording
Press PHOTO deeper. The still picture is then recorded for about seven seconds and your camcorder returns to the standby mode. You cannot select another still picture.

To record clear and less fluctuated still pictures
We recommend that you record on "Memory Stick"s. (DCR-TRV17 only)

Self-timer recording

You can record still images on tapes with the self-timer. You can also use the Remote Commander for this operation.

(1) In the standby mode, press MENU to display the menu settings.
(2) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(3) Turn the SEL / PUSH EXEC dial to select SELFTIMER, then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select ON, then press the dial.
(5) Press MENU to make the menu settings disappear.
(6) Press PHOTO deeper.
Self-timer starts counting down from 10 with a beep sound. In the last two seconds of the countdown, the beep sound gets faster, then recording starts automatically.

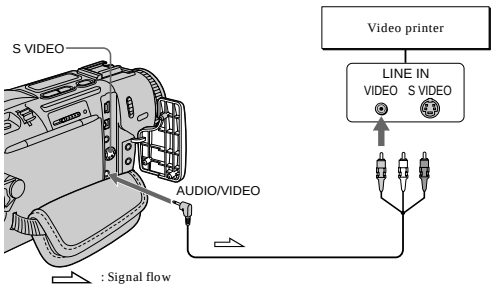


To cancel self-timer recording
Set SELFTIMER to OFF in the menu settings in the standby mode.
You cannot cancel the self-timer recording using the Remote Commander.

Note
The self-timer recording mode is automatically cancelled when:
– Self-timer recording is finished.
– The POWER switch is set to OFF (CHG) or VCR.

Printing the still picture

You can print a still picture by using the video printer (optional). Connect the video printer using the A / V connecting cable supplied with your camcorder.
Connect it to the AUDIO / VIDEO jack and connect the yellow plug of the cable to the video input of the video printer. Refer to the operating instructions of the video printer as well.



If the video printer is equipped with S video input
Use the S video connecting cable (optional). Connect it to the S VIDEO jack and the S video input of the video printer.

Adjusting the white balance manually

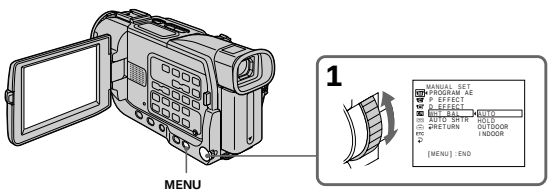
You can manually adjust and set the white balance. This adjustment makes white subjects look white and allows more natural color balance. Normally white balance is automatically adjusted.

(1) In CAMERA or MEMORY (DCR-TRV17 only) mode, select WHT BAL in in the menu settings (p. 97).
(2) Select the desired white balance mode in the menu settings.

(INDOOR) :
- Lighting condition changes quickly
- Too bright place such as photography studios
- Under sodium lamps or mercury lamps

(OUTDOOR) :
- Recording a sunset / sunrise, just after sunset, just before sunrise, neon signs, or fireworks
- Under a color matching fluorescent lamp

HOLD :
Recording a single-colored subject or background



To return to the automatic white balance mode
Set WHT BAL to AUTO in the menu settings.

If the picture is being taken in a studio lit by TV lighting
We recommend that you record in the indoor mode.

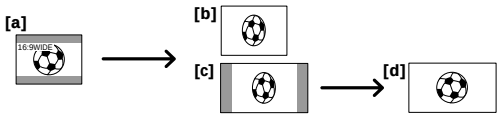
When you record under fluorescent lighting
Use the automatic white balance or hold mode.
Your camcorder may not adjust the white balance correctly in the indoor mode.

In the automatic white balance mode
Point your camcorder at a white subject for about 10 seconds after setting the POWER switch to CAMERA to get a better adjustment when:
- You detach the battery for replacement.
- You bring your camcorder to the outdoors from the interior of a house holding the exposure, or vice versa.

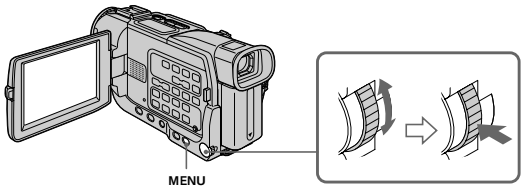
In the hold white balance mode
Set the white balance to AUTO and reset to HOLD after a few seconds when:
- You change the PROGRAM AE mode.
- You bring your camcorder to the outdoors from the interior of a house, or vice versa.

Using the wide mode

You can record a 16:9 wide picture to watch on the 16:9 wide-screen TV (16:9WIDE). Black bands appear on the screen during recording in 16:9WIDE mode **[a].** The picture during a playback on a normal TV **[b]** or on a wide-screen TV **[c]** is compressed in the widthwise direction. If you set the screen mode of the wide-screen TV to the full mode, you can watch pictures of normal images **[d].**



In the standby mode, set 16:9WIDE to ON in ☎ in the menu settings (p. 97).



To cancel the wide mode

Set 16:9WIDE to OFF in the menu settings.

In the wide mode, you cannot select the following functions:
– OLD MOVIE
– BOUNCE

During recording
You cannot select or cancel the wide mode. When you cancel the wide mode, set your camcorder to the standby mode and then set 16:9WIDE to OFF in the menu settings.

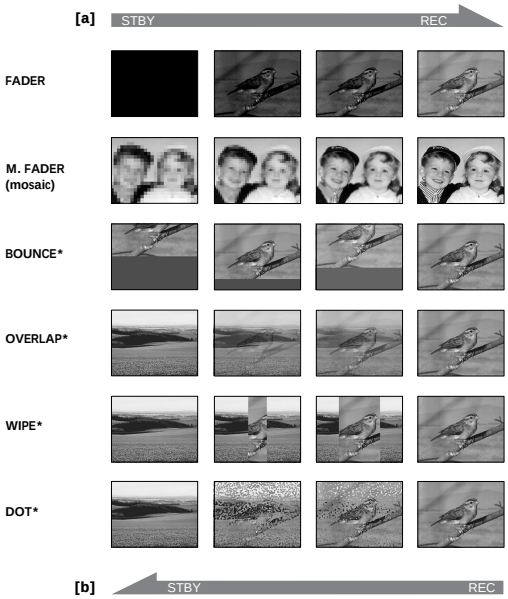
Connection for a TV
Pictures recorded in the 16:9WIDE mode automatically appear on the TV screen at full size when:
– You connect your camcorder to a TV that is compatible with the video ID (ID-1 / ID-2) system.
– You connect your camcorder to the S video jack on the TV.

ID-1 system
The ID-1 system sends aspect ratio information (16:9, 4:3, or letter box) with video signals. If you connect a TV compatible with the ID-1 system, the screen size is automatically selected.

ID-2 system
The ID-2 system sends a copyright protection signal with ID-1 signals inserted between video signals when you connect your camcorder to other equipment using the A / V connecting cable.

Using the fader function

You can fade in or out to give your recording a professional appearance.

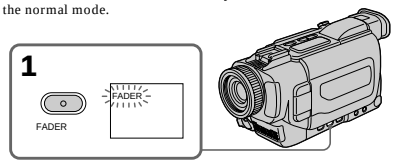


MONOTONE
When fading in, the picture gradually changes from black-and-white to color.
When fading out, the picture gradually changes from color to black-and-white.

* Fade in only

Using the fader function

(1) When fading in [a]
In the standby mode, press FADER until the desired fader indicator flashes.
When fading out [b]
In the recording mode, press FADER until the desired fader indicator flashes.
The indicator changes as follows:
FADER → M.FADER → BOUNCE → MONOTONE → OVERLAP → WIPE → DOT → no indicator
The last selected fader mode is indicated first of all.
(2) Press START / STOP. The fader indicator stops flashing.
After the fader in / out is carried out, your camcorder automatically returns to the normal mode.



To cancel the fader function

Before pressing START / STOP, press FADER until the indicator disappears.

Note
You cannot use the following functions while using the fader function. Also, you cannot use the fader function while using the following functions:
– Digital effect
– Low lux mode of PROGRAM AE (Overlap, Wipe, or Dot function only)(The low lux indicator flashes.)
– Super NightShot
– Tape Photo recording

When the OVERLAP, WIPE, or DOT indicator appear in the standby mode
Your camcorder automatically stores the image recorded on a tape. As the image is being stored, the indicators flash fast, and the playback picture disappears. At this stage, the picture may not be recorded clearly, depending on the tape condition.

While using the bounce function, you cannot use the following functions:
– Exposure
– Focus
– Zoom
– Picture effect

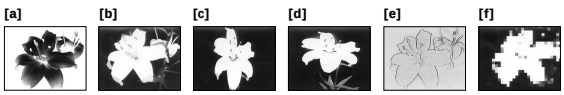
Note on the bounce function
The BOUNCE indicator does not appear in the following mode or functions:
– D ZOOM is activated in the menu settings
– 16:9 wide
– Picture effect
– PROGRAM AE

While in MEMORY mode (DCR-TRV17 only)
You cannot use the fader function.

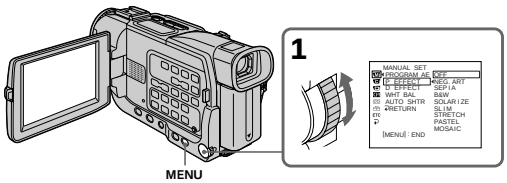
Using special effects – Picture effect

You can digitally process images to obtain special effects like those in films or on TV.

NEG. ART [a] : The color and brightness of the picture are reversed.
SEPIA : The picture gets sepia.
B&W : The picture appears in monochrome (black-and-white).
SOLARIZE [b] : The light intensity is clearer, and the picture looks like an illustration.
SLIM [c] : The picture expands vertically.
STRETCH [d] : The picture expands horizontally.
PASTEL [e] : The contrast of the picture is emphasized, and the picture looks like an animated cartoon.
MOSAIC [f] : The picture gets mosaic-patterned.



(1) In CAMERA mode, select P EFFECT in 📷 in the menu settings. (p. 97).
(2) Select the desired picture effect mode in the menu settings.



To cancel the picture effect function

Set P EFFECT to OFF in the menu settings.

While using the picture effect function, you cannot select the following functions:
– OLD MOVIE
– BOUNCE

When you turn the power off
Your camcorder automatically returns to the normal mode.

Using special effects – Digital effect

You can add special effects to recorded pictures using the various digital functions. The sound is recorded normally.

STILL
You can record a still picture so that it is superimposed on a moving picture.

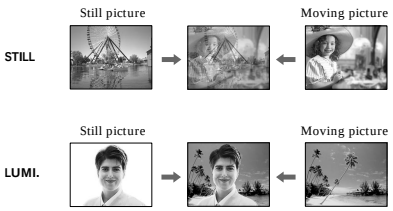
FLASH (FLASH MOTION)
You can record still pictures successively at constant intervals.

LUMI. (LUMINANCEKEY)
You can swap a brighter area in a still picture with a moving picture.

TRAIL
You can record the picture so that an incidental image like a trail is left.

SLOW SHTR (SLOW SHUTTER)
You can slow down the shutter speed. The slow shutter mode is good for recording dark pictures more brightly.

OLD MOVIE
You can add an old movie type atmosphere to pictures. Your camcorder automatically sets the wide mode to ON and picture effect to SEPIA, and the appropriate shutter speed.



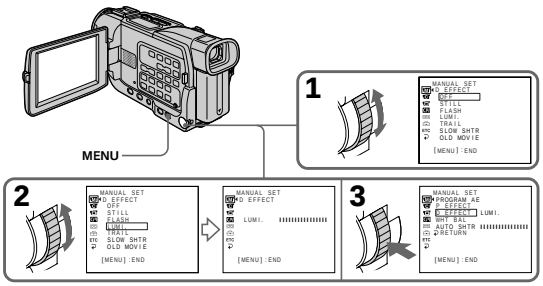
Using special effects – Digital effect

(1) In CAMERA mode, select D EFFECT in in the menu settings (p. 97).
(2) Select the desired digital effect mode in the menu settings, then press the SEL / PUSH EXEC dial.
The bars appear, in the STILL and LUMI. modes. The still image is stored in memory.
(3) Turn the SEL / PUSH EXEC dial to adjust the effect, then press the dial.

Items to be adjusted

STILL	The rate of the still picture you want to superimpose on the moving picture
FLASH	The interval of flash motion
LUMI.	The color scheme of the area in the still picture which is to be swapped with a moving picture
TRAIL	The time until the incidental image vanishes
SLOW SHTR	Shutter speed. The larger the shutter speed number, the slower the shutter speed.
OLD MOVIE	No adjustment necessary

The more bars there are on the screen, the stronger the digital effect. The bars appear in the following modes: STILL, FLASH, LUMI. and TRAIL.



To cancel the digital effect function
Set D EFFECT to OFF in the menu settings.

Using special effects – Digital effect

Notes
- The following functions do not work during digital effect:
  – Fader
  – Low lux mode of PROGRAM AE (The low lux indicator flashes.)
  – Tape photo recording
  – Super NightShot
- The PROGRAM AE function does not work in the slow shutter mode.
- The following functions do not work in the old movie mode:
  – Wide mode
  – Picture effect
  – PROGRAM AE

When you turn the power off
The digital effect will be automatically canceled.

When recording in the slow shutter mode
Auto focus may not be effective. Focus manually using a tripod.

Shutter speed

Shutter speed number	Shutter speed
SLOW SHTR 1	1/30
SLOW SHTR 2	1/15
SLOW SHTR 3	1/8
SLOW SHTR 4	1/4

Using the PROGRAM AE function

You can select PROGRAM AE (Auto Exposure) mode to suit your specific shooting requirements.

Spotlight
This mode prevents people's faces, for example, from appearing excessively white when shooting subjects lit by strong light in the theater.

Soft portrait
This mode brings out the subject while creating a soft background for subjects such as people or flowers.

Sports lesson
This mode minimizes shake on fast-moving subjects such as in tennis or golf.

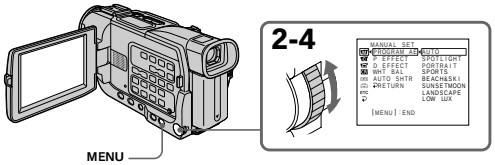
Beach & ski
This mode prevents people's faces from appearing dark in strong light or reflected light, such as at a beach in midsummer or on a ski slope.

Sunset & moon
This mode allows you to maintain atmosphere when you are recording sunsets, general night views, fireworks displays and neon signs.

Landscape
This mode is for when you are recording distant subjects such as mountains and prevents your camcorder from focusing on glass or metal mesh in windows when you are recording a subject behind glass or a screen.

Low lux
This mode makes subjects brighter in insufficient light.

(1) Press MENU to display menu settings in CAMERA or MEMORY (DCR-TRV17 only) mode.
(2) Turn the SEL / PUSH EXEC dial to select , then press the dial (p. 97).
(3) Turn the SEL / PUSH EXEC dial to select PROGRAM AE, then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select the desired mode.



To turn the PROGRAM AE function off

Set PROGRAM AE to AUTO in the menu settings.

Notes

- Because your camcorder is set to focus only on subjects in the middle to far distance, you cannot take close-ups in the following mode:
  – Spotlight
  – Sports lesson
  – Beach & ski
- Your camcorder is set to focus only on distant subjects in the following modes:
  – Sunset & moon
  – Landscape
- The following functions do not work in the PROGRAM AE mode:
  – Slow shutter
  – OLD MOVIE
  – BOUNCE
- The following functions do not work in the low lux mode:
  – Digital effect
  – Overlap
  – Wipe
  – Dot
- While setting the NIGHTSHOT to ON, the PROGRAM AE function does not work. (The indicator flashes.)
- While shooting in MEMORY mode (DCR-TRV17 only), the following modes do not work (The indicator flashes.) :
  – Low lux
  – Sports lesson

While WHT BAL is set to AUTO in the menu settings
The white balance is adjusted even if the PROGRAM AE function is selected.

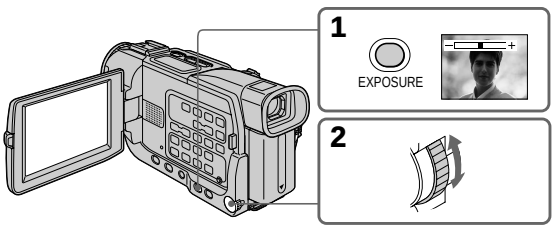
Even if the PROGRAM AE function is selected
You can adjust the exposure.

If you are recording under a discharge tube such as a fluorescent lamp, sodium lamp or mercury lamp
Flickering or changes in color may occur in the following modes. If this happens, turn the PROGRAM AE function off.
– Soft portrait
– Sports lesson

Adjusting the exposure manually

You can manually adjust and set the exposure. Adjust the exposure manually in the following cases:
– The subject is backlit
– Bright subject and dark background
– To record dark pictures (e.g. night scenes) faithfully

(1) In CAMERA or MEMORY (DCR-TRV17 only) mode, press EXPOSURE. The exposure indicator appears.
(2) Turn the SEL / PUSH EXEC dial to adjust the brightness.



To return to the automatic exposure mode

Press EXPOSURE again.

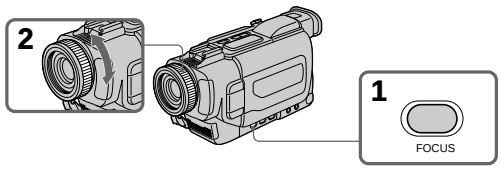
Note
When you adjust the exposure manually, the backlight function does not work.

Your camcorder automatically returns to the automatic exposure mode:
– If you change the PROGRAM AE mode.
– If you slide NIGHTSHOT to ON.

Focusing manually

You can gain better results by manually adjusting the focus in the following cases:
- The autofocus mode is not effective when shooting
  – subjects through glass coated with water droplets
  – horizontal stripes
  – subjects with little contrast with backgrounds such as walls and sky
- When you want to change the focus from a subject in the foreground to a subject in the background
- Shooting a stationary subject when using a tripod

(1) In CAMERA or MEMORY (DCR-TRV17 only) mode, press FOCUS lightly. The indicator appears.
(2) Turn the focus ring to sharpen focus.



To return to the autofocus mode

Press FOCUS lightly to turn off the indicator.

To record distant subjects

When you press FOCUS down firmly, the lens focuses on and indicator appears. When you release FOCUS, your camcorder returns to the manual focus mode. Use this mode when your camcorder focuses on near objects even though you are trying to shoot a distant object.

To focus precisely
It is easier to focus on the subject if you adjust the zoom to shoot at the "W" (wide-angle) after focusing at the "T" (telephoto) position.

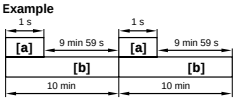
When you shoot close to the subject
Focus at the end of the "W" (wide-angle) position.

changes as follows:
when recording a distant subject.
when the subject is too close to focus on.

Interval recording

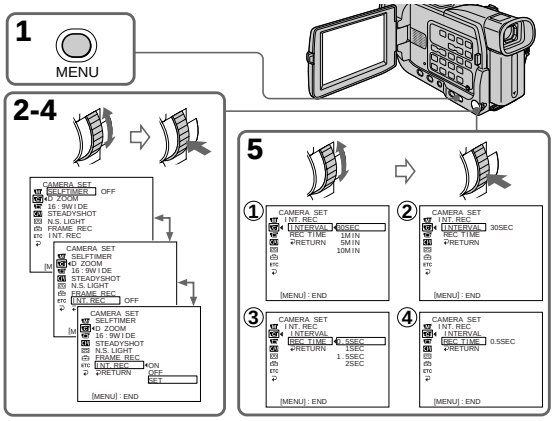
You can make a time-lapse recording by setting the camcorder to automatically record and standby sequentially. You can achieve an excellent recording for flowering, emergence, etc., with this function.

Example

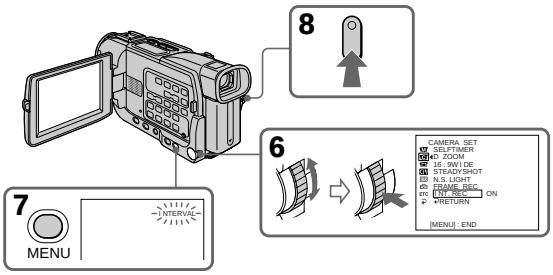


[a] Recording time
[b] Waiting time

(1) Press MENU to display the menu in standby mode.
(2) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(3) Turn the SEL / PUSH EXEC dial to select INT. REC, then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select SET, then press the dial.
(5) Set INTERVAL and REC TIME.
① Turn the SEL / PUSH EXEC dial to select INTERVAL, then press the dial.
② Turn the SEL / PUSH EXEC dial to select the desired interval time, then press the dial.
The time: 30SEC ↔ 1MIN ↔ 5MIN ↔ 10MIN
③ Turn the SEL / PUSH EXEC dial to select REC TIME, then press the dial.
④ Turn the SEL / PUSH EXEC dial to select the desired recording time, then press the dial.
The time: 0.5SEC ↔ 1SEC ↔ 1.5SEC ↔ 2SEC
⑤ Turn the SEL / PUSH EXEC dial to select RETURN, then press the dial twice.



(6) Turn the SEL / PUSH EXEC dial to select ON, then press the dial.
(7) Press MENU to erase the menu display. The interval recording indicator flashes.
(8) Press START / STOP to start interval recording. The interval recording indicator lights up.



To cancel the interval recording

• Set INT. REC to OFF in the menu settings.
• Set the POWER switch to OFF (CHG), VCR or MEMORY (DCR-TRV17 only).

To stop the interval recording momentarily and perform normal recording

Press START / STOP. You can perform normal recording only once. To cancel the normal recording, press START / STOP again.

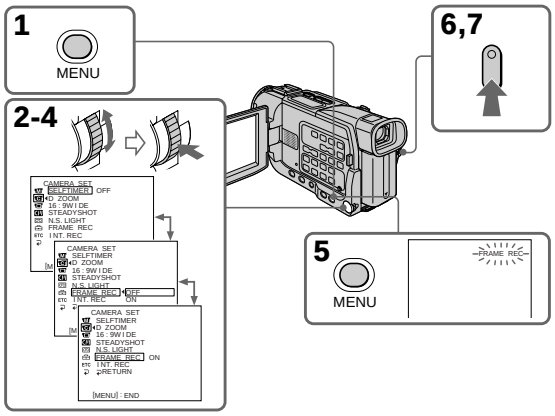
Note on interval recording (DCR-TRV17 only)
You cannot do interval recording in memory mode.

On recording time
There may be a discrepancy in recording time of up to +/– 6 frames from the selected time.

Frame by frame recording – Cut recording

You can make a recording with a stop-motion animated effect using cut recording. To create this effect, alternately move the subject a little and make a cut recording. We recommend that you use a tripod, and operate the camcorder using the Remote Commander after step 6.

(1) Press MENU to display the menu in standby mode.
(2) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(3) Turn the SEL / PUSH EXEC dial to select FRAME REC, then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select ON, then press the dial.
(5) Press MENU to erase the menu display.
The FRAME REC indicator lights up.
(6) Press START / STOP to start cut recording. The camcorder makes a recording for about six frames, and returns to recording standby.
(7) Move the subject, and repeat step 6.



To cancel the cut recording

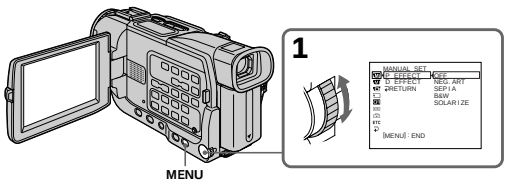
• Set FRAME REC to OFF in the menu settings.
• Set the POWER switch to OFF (CHG), VCR, or MEMORY (DCR-TRV17 only).

Notes on cut recording
• The last recorded cut is longer than other cuts.
• The proper remaining tape time is not indicated if you use this function continuously.

Playing back a tape with picture effects

During playback, you can process a scene using the picture effect functions: NEG. ART, SEPIA, B&W and SOLARIZE.

(1) In the playback or playback pause mode, select P EFFECT in in the menu settings (p. 97).
(2) Select the desired mode by turning the SEL / PUSH EXEC dial.
For details of each picture effect function, see page 45.



To cancel the picture effect function

Set P EFFECT to OFF in the menu settings.

Notes
• You cannot process the picture that is input from other equipment using the picture effect function.
• To record pictures that you have processed using the picture effect function, record the pictures on the VCR, using your camcorder as a player.

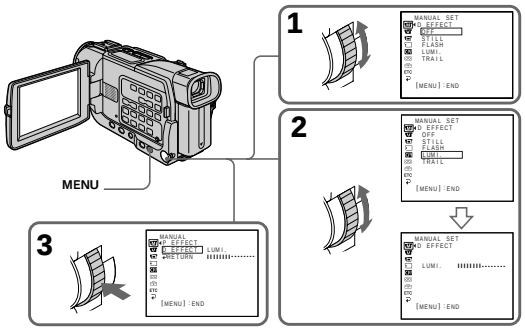
Pictures processed by the picture effect function
Pictures processed by the picture effect function are not output through the i DV IN / OUT jack.

When you set the POWER switch to OFF (CHG) or stop playing back
The picture effect function is automatically canceled.

Playing back a tape with digital effects

During playback, you can process a scene using the digital effect functions: STILL, FLASH, LUMI. and TRAIL.

(1) In the playback or playback pause mode, select D EFFECT in in the menu settings (p. 97).
(2) Select the desired digital effect mode in the menu settings, then press the SEL / PUSH EXEC dial. The digital effect indicator lights up and the bars appear. In the STILL or LUMI. mode, the image where you press the SEL / PUSH EXEC dial is stored in memory as a still image.
(3) Turn the SEL / PUSH EXEC dial to adjust the effect, then press the dial. For details of each digital effect function, see page 46.



To cancel the digital effect function
Set D EFFECT to OFF in the menu settings.

Notes
- You cannot process externally input scenes using the digital effect function.
- To record pictures that you have processed using the digital effect function, record the pictures on the VCR, using your camcorder as a player.

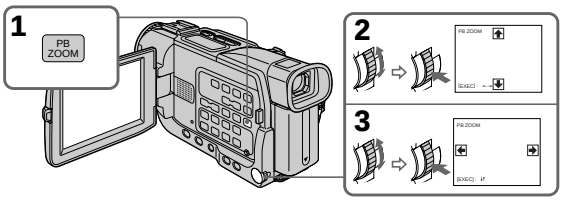
Pictures processed by the digital effect function
- Pictures processed by the digital effect function are not output through the DV IN / OUT jack.
- You cannot use the tape PB ZOOM function for pictures processed by digital effect function.

When you set the POWER switch to OFF (CHG) or stop playing back
The digital effect function is automatically canceled.

Enlarging images recorded on tapes – Tape PB ZOOM

You can enlarge still and moving playback pictures. You can also dub the enlarged pictures to tapes or copy to "Memory Stick"s (DCR-TRV17 only) (p. 121).
You can also enlarge still play back images recorded on "Memory Stick" (DCR-TRV17 only) (p. 140).

(1) In the playback or playback pause mode, press PB ZOOM on your camcorder. The image is enlarged, and ↑ ↓ ← → appears on the screen.
(2) Turn the SEL / PUSH EXEC dial to move the enlarged image, then press the dial.
↑ : The image moves downwards.
↓ : The image moves upwards.
(3) Turn the SEL / PUSH EXEC dial to move the enlarged image, then press the dial.
→ : The image moves leftward (Turn the dial upwards.)
← : The image moves rightward (Turn the dial downwards.)



To cancel the PB ZOOM function
Press PB ZOOM.

Note
You cannot process externally input scenes using the PB ZOOM function with your camcorder.

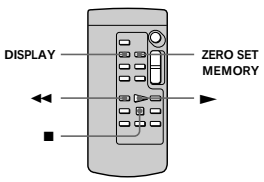
The PB ZOOM function is automatically canceled when you operate the following functions:
– Set the POWER switch to OFF (CHG)
– Stop playback
– Display the menu settings

Pictures in the PB ZOOM
Pictures in the PB ZOOM mode are not output through the DV IN / OUT jack.

Quickly locating a scene using the zero set memory function

Your camcorder goes forward or backward to automatically stop at a desired scene having a tape counter value of "0:00:00". You can do this with the Remote Commander.

(1) In the playback mode, press DISPLAY.
(2) Press ZERO SET MEMORY at the point you want to locate later. The tape counter shows "0:00:00" and the ZERO SET MEMORY indicator flashes.
(3) Press ■ when you want to stop playback.
(4) Press ◀◀ to rewind the tape to the tape counter's zero point. The tape stops automatically when the tape counter reaches approximately zero. The ZERO SET MEMORY indicator disappears and the time code appears.
(5) Press ►. Playback starts.



Notes
- When you press ZERO SET MEMORY before rewinding the tape, the zero set memory function will be canceled.
- There may be a discrepancy of several seconds from the time code.

If a tape has a blank portion in the recorded portions
The zero set memory function may not work correctly.

Zero set memory functions also in the standby mode
When you insert a scene in the middle of a recorded tape, press ZERO SET MEMORY at the point you want to end the insertion. Rewind the tape to the insert start point, and start recording. Recording stops automatically at the tape counter zero point. Your camcorder returns to the standby mode.

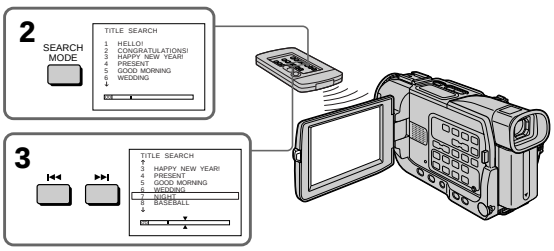
Searching the boundaries of recorded tape by title – Title search

CM only

If you use a tape with cassette memory, you can search for the boundaries of recorded tape by title. Use the Remote Commander for this operation.

Before operation
Set CM SEARCH in to ON in the menu settings (p. 100). (The default setting is ON.)

(1) Set the POWER switch to VCR.
(2) Press SEARCH MODE on the Remote Commander repeatedly, until the TITLE SEARCH indicator appears.
The indicator changes as follows:
→ TITLE SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator →
(3) Press ⏮ or ⏭ on the Remote Commander to select the title for playback. Your camcorder automatically starts playback of the scene having the title that you selected.



To stop searching
Press ■.

If you use a tape without cassette memory
You cannot superimpose or search a title.

In the mark
- The bar in the mark indicates the present point on the tape.
- The ▼ mark in the mark indicates the actual point you are trying to search.

If a tape has a blank portion between recorded portions
The title search function may not work correctly.

To superimpose a title
See page 89.

Searching a recording by date – Date search

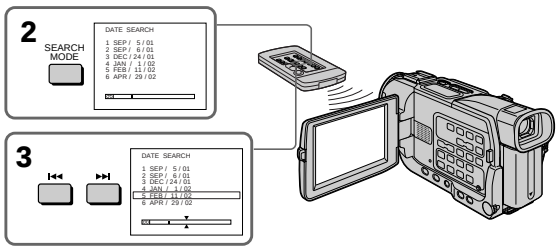
You can automatically search for the point where the recording date changes and start playback from that point. Use a tape with cassette memory for convenience. Use the Remote Commander for this operation.
Use this function to check where recording dates change or to edit the tape at each recording date.

Searching for the date by using cassette memory

Before operation
- You can use this function only when playing back a tape with cassette memory (p. 158).
- Set CM SEARCH in CM to ON in the menu settings (p. 100). (The default setting is ON).

(1) Set the POWER switch to VCR.
(2) Press SEARCH MODE on the Remote Commander repeatedly, until the DATE SEARCH indicator appears.
The indicator changes as follows:
→ TITLE SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator →

(3) Press ⏮ or ⏭ on the Remote Commander to select the date for playback.
Your camcorder automatically starts playback at the beginning of the selected date.


2
SEARCH MODE
DATE SEARCH
1 SEP / 5 / 01
2 SEP / 6 / 01
3 DEC / 24 / 01
4 JAN / 1 / 02
5 FEB / 11 / 02
6 APR / 29 / 02
3
DATE SEARCH
1 SEP / 5 / 01
2 SEP / 6 / 01
3 DEC / 24 / 01
4 JAN / 1 / 02
5 FEB / 11 / 02
6 APR / 29 / 02

To stop searching
Press ■.

Searching a recording by date – Date search

Note
If one day's recording is less than two minutes, your camcorder may not accurately find the point where the recording date changes.

In the mark
- The bar in the mark indicates the present point on the tape.
- The ⧗ mark in the mark indicates the actual point you are trying to search.

If a tape has a blank portion between recorded portions
The date search function may not work correctly.

Cassette memory
The tape cassette memory can hold six recording date data. If you search the date among seven or more data, see "Searching for the date without using cassette memory" below.

Searching for the date without using cassette memory

(1) Set the POWER switch to VCR.
(2) Set CM SEARCH in CM to OFF in the menu settings (p. 100).
(3) Press SEARCH MODE on the Remote Commander repeatedly, until the DATE SEARCH indicator appears.
The indicator changes as follows:
→ DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator →

(4) Press ⏮ on the Remote Commander to search for the previous date or press ⏭ on the Remote Commander to search for the next date. Your camcorder automatically starts playback at the point where the date changes. Each time you press ⏮ or ⏭, your camcorder searches for the previous or next date.

To stop searching
Press ■.

Searching for a photo – Photo search/Photo scan

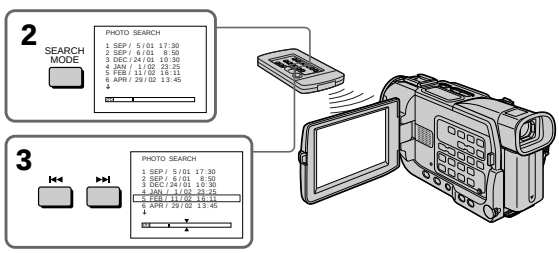
You can search for a still picture you have recorded on a tape **(photo search)**.
You can also search for still pictures one after another and display each picture for five seconds automatically regardless of cassette memory **(photo scan)**. Use the Remote Commander for these operations.
Use this function to check or edit still pictures.

Searching for a photo by using cassette memory

Before operation
- You can use this function only when playing back a tape with cassette memory.
- Set CM SEARCH in CM to ON in the menu settings (p. 100). (The default setting is ON.)

(1) Set the POWER switch to VCR.
(2) Press SEARCH MODE on the Remote Commander repeatedly, until the PHOTO SEARCH indicator appears.
The indicator changes as follows:
→ TITLE SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator →

(3) Press ⏮ or ⏭ on the Remote Commander to select the date for playback.
Your camcorder automatically starts playback of the photo having the date that you selected.



To stop searching
Press ■.

In the mark
- The bar in the mark indicates the present point on the tape.
- The ⧗ mark in the mark indicates the actual point you are trying to search.

If a tape has a blank portion between recorded portions
The photo search / photo scan function may not work correctly.

The available number of photos that can be searched using the cassette memory
The available number is up to 12 photos. However, you can search 13 photos or more using the scanning photo function.

Searching for a photo – Photo search/Photo scan

Searching for a photo without using cassette memory

(1) Set the POWER switch to VCR.
(2) Set CM SEARCH in CM to OFF in the menu settings (p. 100).
(3) Press SEARCH MODE on the Remote Commander repeatedly, until the PHOTO SEARCH indicator appears.
The indicator changes as follows:
→ DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator →

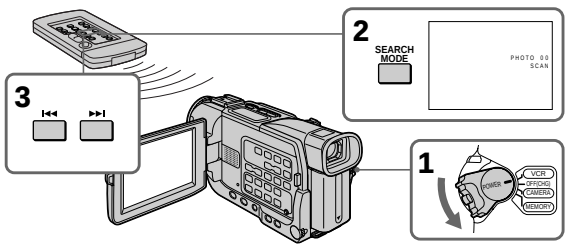
(4) Press ⏮ or ⏭ on the Remote Commander to select the photo for playback. Each time you press ⏮ or ⏭, your camcorder searches for the previous or next photo.
Your camcorder automatically starts playback of the photo.

To stop searching
Press ■.

Scanning photo

(1) Set the POWER switch to VCR.
(2) Press SEARCH MODE on the Remote Commander repeatedly, until the PHOTO SCAN indicator appears.
The indicator changes as follows:
→ DATE SEARCH → PHOTO SEARCH → PHOTO SCAN → no indicator →

(3) Press ⏮ or ⏭ on the Remote Commander.
Each photo is played back for about five seconds automatically.



To stop scanning
Press ■.

Dubbing a tape

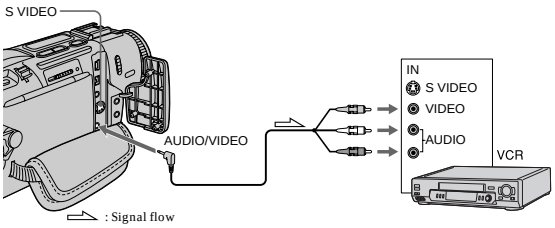
Using the A/V connecting cable

You can dub or edit on the VCR connected to your camcorder using your camcorder as a player.
Connect your camcorder to the VCR using the A / V connecting cable supplied with your camcorder.

Before operation

- Set DISPLAY to LCD in the menu settings. (The defalt setting is LCD.)
- Press the following buttons to make the indicator disappear so that they will not be superimposed on the edited tape:
  – DISPLAY
  – DATA CODE on the Remote Commander
  – SEARCH MODE on the Remote Commander

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert the recorded tape into your camcorder.
(2) Prepare the VCR for recording, then set the input selector to LINE.
Refer to the operating instructions of the VCR.
(3) Set the POWER switch to VCR.
(4) Play back the recorded tape on your camcorder.
(5) Start recording on the VCR. Refer to the operating instructions of your VCR.



When you have finished dubbing a tape

Press ■ on both your camcorder and the VCR.

You can edit on VCRs that support the following systems

8 8 mm, Hi8 Hi8, VHS VHS, S-VHS S-VHS, VHSC VHSC, S-VHSC S-VHSC, Beta Betamax, ED Beta ED Betamax, mini DV mini DV, DV DV, Digital8

If your VCR is a monaural type

Connect the yellow plug of the A / V connecting cable to the video input jack and the white or the red plug to the audio input jack on the VCR or the TV. When the white plug is connected, the left channel audio is output, and the red plug is connected, the right channel audio is output.

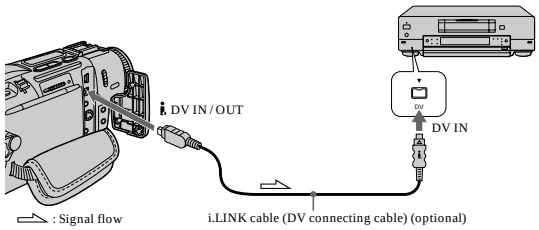
If your VCR has an S video jack

Connect using an S video cable (optional) to obtain high-quality pictures.
With this connection, you do not need to connect the yellow (video) plug of the A / V connecting cable.
Connect an S video cable (optional) to the S video jacks of both your camcorder and the VCR.
This connection produces higher quality DV format pictures.

Using the i.LINK cable (DV connecting cable)

Simply connect the i.LINK cable (DV connecting cable) (optional) to i DV IN / OUT and to DV IN of the DV products. With digital-to-digital connection, video and audio signals are transmitted in digital form for high-quality editing. You cannot dub the titles, display indicators or the contents of cassette memory. You can dub the titles, display indicators, the contents of cassette memory or letters on the "Memory Stick" index screen (DCR-TRV17 only).
Set the input selector on the VCR to the DV input position if the VCR is equipped with the input selector.

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert the recorded tape into your camcorder.
(2) Prepare the VCR for recording.
Set the input selector to LINE. Refer to the operating instructions of the VCR.
(3) Set the POWER switch to VCR.
(4) Play back the recorded tape on your camcorder.
(5) Start recording on the VCR. Refer to the operating instractions of your VCR.



When you have finished dubbing a tape

Press ■ on both your camcorder and the connected DV product.

You can connect one VCR only using the i.LINK cable (DV connecting cable)

See page 162 for more information about i.LINK.

The following functions do not work during digital editing:

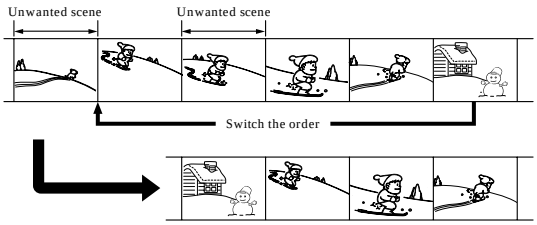
– Digital effect
– PB ZOOM
– Picture effect

If you record a playback pause picture with the i DV IN/OUT jack

The recorded picture becomes rough. And when you play back the picture using the other video equipment, the picture may jitter.

Dubbing only desired scenes – Digital program editing

You can duplicate selected scenes (programs) for editing onto a tape without operating the VCR.
Scenes can be selected by frame. You can set up to 20 programs.



Before operating the Digital program editing function

Step 1 Connecting the VCR (p. 68).
Step 2 Setting the VCR for operation (p. 69, 73).
Step 3 Adjusting the synchronicity of the VCR (p. 73).
When you dub using the same VCR again, you can skip steps 2 and 3.

Using the Digital program editing function

Operation 1 Making the program (p. 76).
Operation 2 Performing Digital program editing (dubbing a tape) (p. 78).

Step 1: Connecting the VCR

You can connect both an A / V connecting cable and an i.LINK cable (DV connecting cable).
When you use the A / V connecting cable, connect the devices as illustrated in page 66.
When you use an i.LINK cable (DV connecting cable), connect the devices as illustrated in page 67.

Notes

- You cannot dub titles, display indicators, or the contents of cassette memory.
- When you connect with an i.LINK cable (DV connecting cable), you may not be able to operate the dubbing function correctly, depending on the VCR.
  Set CONTROL to IR in the menu settings of your camcorder .
- When editing digital video, the operation signals cannot be sent with LANC.

If you connect using an i.LINK cable (DV connecting cable)

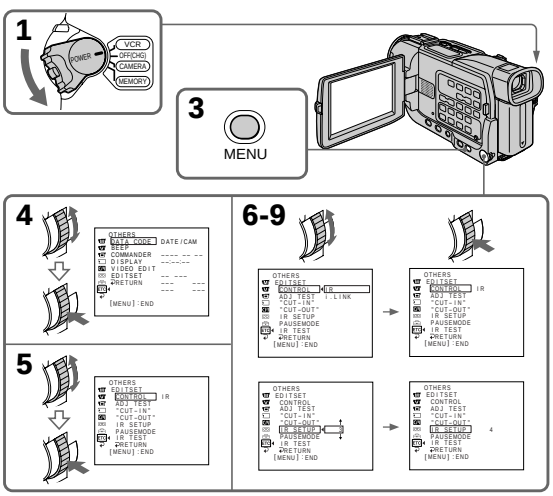
With digital-to-digital connection, video and audio signals are transmitted in digital format for high-quality editing.

Step 2: Setting the VCR to operate with the A/V connecting cable

To edit using the VCR, send the control signal by infrared rays to the remote sensor on the VCR.
When you connect using an A / V connecting cable, follow the procedure below, steps **(1)** to **(4)**, to send the control signal correctly.

(1) Set the IR SETUP code

① Set the POWER switch to VCR on your camcorder.
② Turn the power of the connected VCR on, then set the input selector to LINE.
When you connect a video camera recorder, set its power switch to VCR / VTR.
③ Press MENU to display the menu.
④ Turn the SEL / PUSH EXEC dial to select ETC, then press the dial.
⑤ Turn the SEL / PUSH EXEC dial to select EDIT SET, then press the dial.
⑥ Turn the SEL / PUSH EXEC dial to select CONTROL, then press the dial.
⑦ Turn the SEL / PUSH EXEC dial to select IR, then press the dial.
⑧ Turn the SEL / PUSH EXEC dial to select IR SETUP, then press the dial.
⑨ Turn the SEL / PUSH EXEC dial to select the IR SETUP code of your VCR, then press the dial.
Check the code in "About the IR SETUP code." (p. 70)



About the IR SETUP code

The IR SETUP code is stored in the memory of your camcorder. Be sure to set the correct code depending on your VCR. The default setting is Code number 3.

Brand	IR SETUP code
Sony	1, 2, 3, 4, 5, 6
Admiral (M. Wards)	89
Aiwa	80
Audio Dynamic	21, 35
Bell&Howell (M. Wards)	36
Brocsonic	70, 82
Canon	77, 78, 97
Citizen	47
Craig	73, 47
Curtis Mathis	8, 80, 77
Daewoo	26, 40, 77
DBX	21, 33, 35
Dimensia	8
Emerson	26, 82, 59, 48, 70, 81
Fisher	36, 45, 37, 44
Funai	80
General Electric	87, 8, 77, 32*, 94*
Goldstar	47
Hitachi	78, 8, 42
Instant Replay	77, 78
JC Penny	77, 42, 8, 36, 21, 33, 35
JVC	21, 12, 13, 14, 33, 35
Kenwood	21, 33, 47, 35
LXI (Sears)	80, 47, 42, 44, 45, 36, 37
Magnavox	83, 78, 77
Marantz	21, 33, 35
Marta	47
Memorex	77, 37
Minolta	42, 8
Mitsubishi / MGA	28, 22, 23, 24

Brand	IR SETUP code
Multitech	23, 80, 32
NEC	21, 33, 35
Olympic	77, 78
Panasonic	16, 17, 78, 77, 96
Pentax	42,8
Philco	78, 77
Philips	83, 78, 77
Pioneer	78
Quasar	78, 77, 16, 17
RCA / PROSCAN	8, 42, 16, 77, 83, 7, 40, 41, 78*, 101
Realistic	77, 36
Sansui	21
Singer	73
Samsung	94, 41, 32, 32*, 94*, 24*
Sanyo	36, 37
Scott	40, 41, 32, 37, 28, 22, 23, 24
Sharp	89, 88
Shintom	73
Signature 2000 (M. Wards)	80, 89
Sylvania	83, 78, 77, 80
Symphonic	80
Tashiro	47
Tatung	21, 33, 35
Teac	21, 33, 80, 35
Technics	77, 78
Toshiba	40, 7
Wards	89, 88, 37, 95, 47
Yamaha	36, 21, 33, 35
Zenith	95

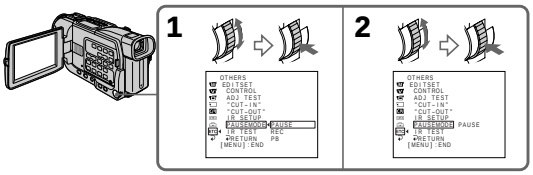
* TV / VCR component

Note on IR SETUP code

Digital program editing is not possible if the VCR does not support IR SETUP codes.

(2) Setting the modes to cancel recording pause on the VCR

① Turn the SEL / PUSH EXEC dial to select PAUSEMODE, then press the dial.
② Turn the SEL / PUSH EXEC dial to select the mode to cancel recording pause on the VCR, then press the dial.

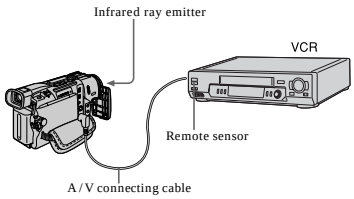


Buttons for canceling recording pause on the VCR

The buttons vary depending on your VCR. To cancel recording pause:
– Select PAUSE if the button to cancel recording pause is ❚❚.
– Select REC if the button to cancel recording pause is ●.
– Select PB if the button to cancel recording pause is ►.

(3) Setting your camcorder and the VCR to face each other

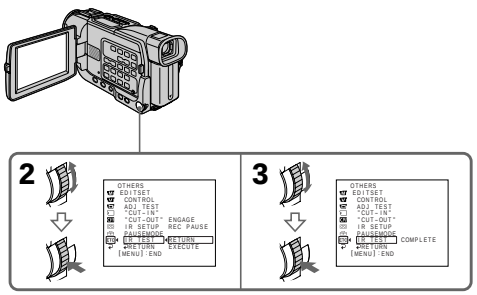
Locate the infrared rays emitter of your camcorder and face it towards the remote sensor of the VCR.
Set the devices about 30 cm (12 in.) apart, and remove any obstacles between the devices.



Editing

(4) Confirming VCR operation

① Insert a recordable tape into the VCR, then set to recording pause.
② Turn the SEL / PUSH EXEC dial to select IR TEST, then press the dial.
③ Turn the SEL / PUSH EXEC dial to select EXECUTE, then press the dial.
If the VCR starts recording, the setting is correct.
When finished, the indicator changes to COMPLETE.



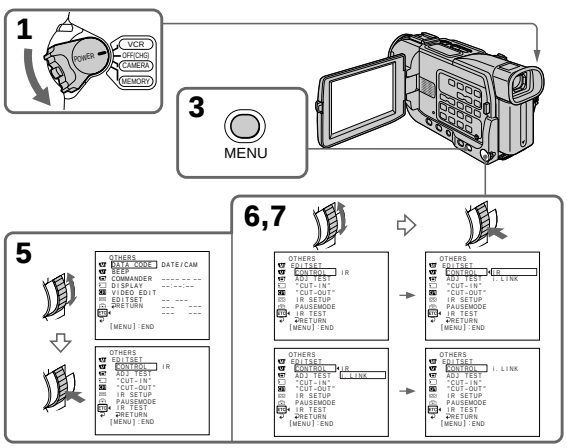
When the VCR does not operate correctly

- After checking the code in "About the IR SETUP code," set the IR SETUP or the PAUSEMODE again.
- Place your camcorder at least 30 cm (12 in.) away from the VCR.
- Refer to the operating instructions of your VCR.

Step 2: Setting the VCR to operate with the i.LINK cable (DV connecting cable)

When you connect using an i.LINK cable (DV connecting cable) (optional), follow the procedure below.

(1) Set the POWER switch to VCR on your camcorder .
(2) Turn the power of the connected VCR on, then set the input selector to DV input.
When you connect a digital video camera recorder, set its power switch to VCR / VTR.
(3) Press MENU to display the menu.
(4) Turn the SEL / PUSH EXEC dial to select Etc, then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select EDIT SET, then press the dial.
(6) Turn the SEL / PUSH EXEC dial to select CONTROL, then press the dial.
(7) Turn the SEL / PUSH EXEC dial to select i.LINK, then press the dial.



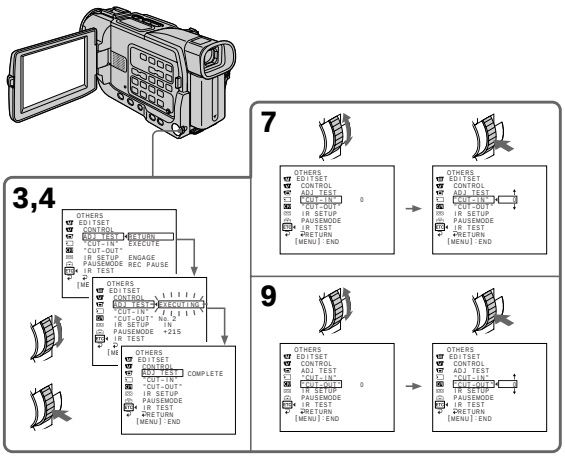
Step 3: Adjusting the synchronicity of the VCR

You can adjust the synchronicity of your camcorder and the VCR. Have a pen and paper ready for notes. Before operation, eject the cassette from your camcorder.

(1) Set the POWER switch to VCR on your camcorder.
(2) Insert a blank tape (or a tape you want to record over) into the VCR, then set to recording pause.
When you select i.LINK in CONTROL, you do not need to set to recording pause.

Editing

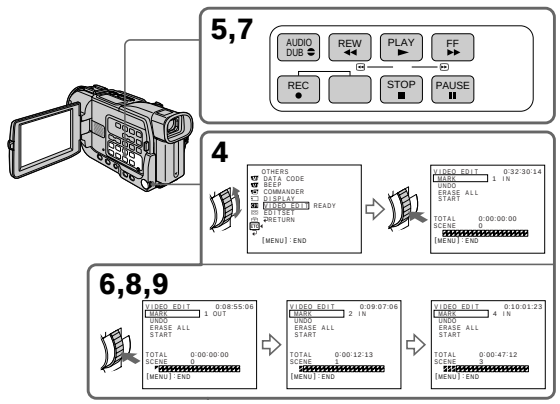
(3) Turn the SEL / PUSH EXEC dial to select ADJ TEST, then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select EXECUTE, then press the dial.
IN and OUT are recorded on an image for 5 times each to calculate the numerical values for adjusting the synchronicity.
The EXECUTING indicator flashes on the screen.
When finished, the indicator changes to COMPLETE.
(5) Rewind the tape in the VCR, then start slow playback.
Take a note of the opening numerical value for each IN and the closing numerical value for each OUT.
(6) Calculate the average of all the opening numerical values for each IN, and the average of all the closing numerical values for each OUT.
(7) Turn the SEL / PUSH EXEC dial to select "CUT-IN", then press the dial.
(8) Turn the SEL / PUSH EXEC dial to select the average numerical value of IN, then press the dial.
The calculated start position for recording is set.
(9) Turn the SEL / PUSH EXEC dial to select "CUT-OUT", then press the dial.
(10) Turn the SEL / PUSH EXEC dial to select the average numerical value of OUT, then press the dial.
The calculated stop position for recording is set.
(11) Turn the SEL / PUSH EXEC dial to select ↩ RETURN, then press the dial.



Notes
- When you complete step 3, the image to adjust the syncronicity is recorded for about 50 seconds.
- If you start recording from the very beginning of the tape, the first few seconds of the tape may not record properly. Be sure to allow about 10 seconds of lead before starting the recording.

Operation 1: Making the program

(1) Insert the tape for playback into your camcorder, and insert a tape for recording into the VCR.
(2) Press MENU to display the menu.
(3) Turn the SEL / PUSH EXEC dial to select ETC, then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select VIDEO EDIT, then press the dial.
(5) Search for the beginning of the first scene you want to insert using the video operation buttons, then pause playback.
(6) Press the SEL / PUSH EXEC dial.
The IN point of the first program is set, and the top part of the program mark changes to light blue.
(7) Search for the end of the first scene you want to insert using the video operation buttons, then pause playback.
(8) Press the SEL / PUSH EXEC dial.
The OUT point of the first program is set, then the bottom part of the program mark changes to light blue.
(9) Repeat steps 5 to 8, then set the program.
When the program is set, the program mark changes to light blue.
You can set a maximum of 20 programs.



Erasing the program you have set

Erase OUT first and then IN from the last set program.
(1) Turn the SEL / PUSH EXEC dial to select UNDO, then press the dial.
(2) Turn the SEL / PUSH EXEC dial to select EXECUTE, then press the dial.
The last set program mark flashes, then the setting is canceled.

To cancel erasing
Select RETURN in step 2.

Erasing all programs

(1) Select VIDEO EDIT in the menu settings. Turn the SEL / PUSH EXEC dial to select ERASE ALL, then press the dial.
(2) Turn the SEL / PUSH EXEC dial to select EXECUTE, then press the dial.
All the program marks flash, then the settings are cancelled.

To cancel erasing all programs
Select RETURN in step 2.

To cancel a program you have set
Press MENU.
The program is stored in memory until the tape is ejected.

Note
You cannot operate recording during Digital program editing.

On a blank portion of the tape
You cannot set IN or OUT on a blank portion of the tape.

If there is a blank portion between IN and OUT on the tape
The total time code may not be displayed correctly.

Operation 2: Performing Digital program editing (Dubbing a tape)

Make sure that your camcorder and VCR are connected, and that the VCR is set to recording pause. This procedure is not necessary when you use an i.LINK cable (DV connecting cable).
When you use a digital video camera recorder, set its power switch to VCR / VTR.

(1) Select VIDEO EDIT. Turn the SEL / PUSH EXEC dial to select START, then press the dial.
(2) Turn the SEL / PUSH EXEC dial to select EXECUTE, then press the dial.
Search for the beginning of the first program, then start dubbing.
The program mark flashes.
The SEARCH indicator appears during a search, and the EDIT indicator appears during editing on the screen.
The program mark changes to light blue after dubbing is complete.
When dubbing ends, your camcorder and the VCR automatically stop.

To stop dubbing during editing
Press ■ on your camcorder.

To quit the Digital program editing function
Your camcorder stops when dubbing is complete. Then the display returns to VIDEO EDIT in the menu settings.
Press MENU to quit the Digital program editing function.

You cannot record on the VCR when:
– The tape has run out.
– The write-protect tab on the cassette is set to lock.
– The IR SETUP code is not correct. (when IR is selected.)
– The button to cancel recording pause is not correct. (when IR is selected.)

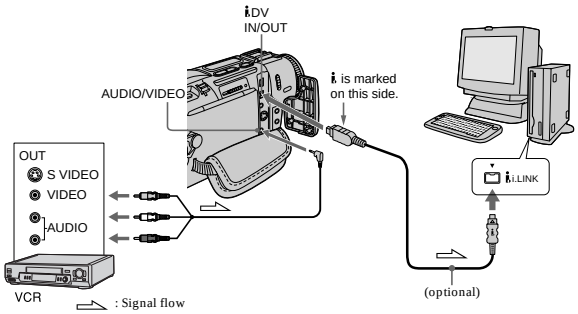
NOT READY appears on the LCD screen when:
– The program to operate Digital program editing has not yet been made.
– i.LINK is selected but an i.LINK cable (DV connecting cable) is not connected.
– The power of the connected VCR is not turned on. (when you set i.LINK.)

Using with analog video unit and personal computer – Signal convert function

You can capture images and sound from an analog video unit connected to your computer which has the i.LINK (DV) jack to your camcorder.

Before operation
Set DISPLAY to LCD in the menu settings. (The default setting is LCD.)

(1) Set the POWER switch to VCR.
(2) Set A / V → DV OUT in to ON in the menu settings (p. 98).
(3) Start playback on the analog video unit.
(4) Start capturing procedures on your computer. The operation procedures depend on your computer and the software which you use.
For details on how to capture images, refer to the instruction manual of computer and software.



After capturing images and sound
Stop capturing procedures on your computer , and stop the playback on the analog video unit.

Notes
• You need to install software which can exchange video signals.
• Depending on the condition of the analog video signals, the computer may not be able to output the images correctly when you convert analog video signals into digital video signals via your camcorder. Depending on the analog video unit, the image may contain noise or incorrect colors.
• You cannot record or capture the video output via your camcorder when the video tapes include copyright protection signals such as ID-2 system.

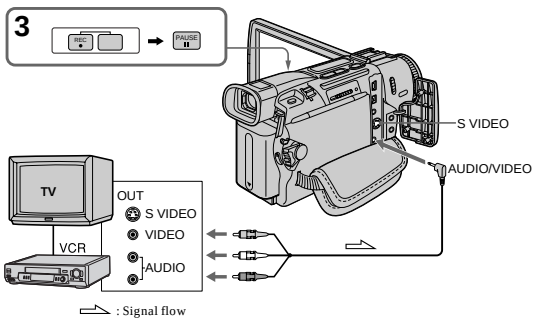
Recording video or TV programs

Using the A/V connecting cable

You can record a tape from another VCR or a TV program from a TV that has video / audio outputs. Use your camcorder as a recorder.

Before operation
Set DISPLAY to LCD in the menu settings. (The default setting is LCD.)

(1) Insert a blank tape (or a tape you want to record over) into your camcorder. If you are recording a tape from the VCR, insert a recorded tape into the VCR.
(2) Set the POWER switch to VCR on your camcorder.
(3) Press ● REC and the button on its right simultaneously on your camcorder, then immediately press ❚❚ on your camcorder.
(4) Press ► on the VCR to start playback if you record a tape from a VCR. Select a TV program if you record from a TV. The picture from a TV or VCR appears on the screen.
(5) Press ❚❚ on your camcorder at the scene where you want to start recording from.



When you have finished dubbing a tape
Press ■ on both your camcorder and the VCR.

If your VCR is a monaural type
Connect the yellow plug of the A / V connecting cable to the video output jack and the white or the red plug to the audio output jack on the VCR or the TV. When the white plug is connected, the left channel audio is output, and the red plug is connected, the right channel audio is output.

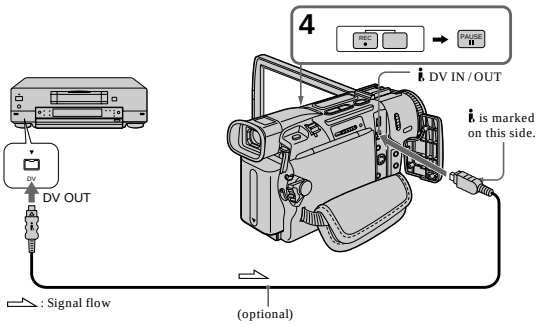
If your TV or VCR has an S video jack
Connect using an S video cable (optional) to obtain high-quality pictures.
With this connection, you do not need to connect the yellow (video) plug of the A / V connecting cable.
Connect an S video cable (optional) to the S (S1) video jacks of both your camcorder and the VCR.
This connection produces higher quality DV format pictures.

Using the i.LINK cable (DV connecting cable)

Simply connect the i.LINK cable (DV connecting cable) (optional) to DV IN / OUT and to DV OUT of the DV products. With digital-to-digital connection, video and audio signals are transmitted in digital form for high-quality editing.

Before operation
Set DISPLAY to LCD in the menu settings. (The default setting is LCD.)

(1) Insert a blank tape (or a tape you want to record over) into your camcorder, and insert the recorded tape into the VCR.
(2) Set the POWER switch to VCR on your comcorder.
(3) Press ● REC and the button on its right simultaneously on your camcorder, then immediately press ❚❚ on your camcorder.
(4) Press ► on the VCR to start playback. The picture to be recorded appears on the screen.
(5) Press ❚❚ on your camcorder at the scene where you want to start recording from.



When you have finished dubbing a tape
Press ■ on your camcorder, and then press the stop button on the VCR.

You can connect one VCR only using the i.LINK cable (DV connecting cable)

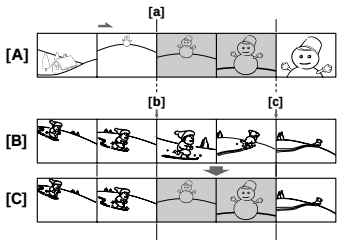
When you dub a picture in digital form
The color of the display may be uneven. However, this does not affect the dubbed picture.

If you record playback pause picture with the i DV IN/OUT jack
The recorded picture becomes rough. And when you play back the picture using your camcorder, the picture may jitter.

Before recording
Make sure if the DV IN indicator appears on the screen. The DV IN indicator may appear on both equipment.

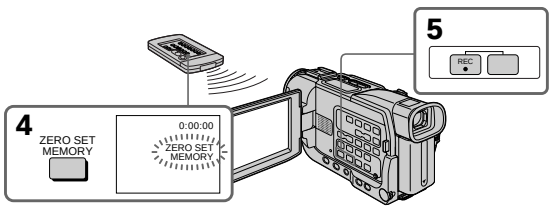
Inserting a scene from a VCR – Insert editing

You can insert a new scene from a VCR onto your originally recorded tape by specifying the insert start and end points. Use the Remote Commander for this operation. Connections are the same as on page 80 or 81.
Insert a cassette containing the desired scene to insert into the VCR.



[A]: A tape that contains the scene to be superimposed
[B]: A tape before editing
[C]: A tape after editing

(1) Set the POWER switch to VCR on your camcorder.
(2) On the connected VCR, locate just before the insert start point **[a]**, then press ❚❚ to set the VCR to the playback pause mode.
(3) On your camcorder, locate the insert end point **[c]** by pressing ◀◀ or ▶▶. Then press ❚❚ to set it to the playback pause mode.
(4) Press ZERO SET MEMORY on the Remote Commander. The ZERO SET MEMORY indicator flashes and the end point of the insert is stored in memory. The tape counter shows "0:00:00."
(5) On your camcorder, locate the insert start point **[b]** by pressing ◀◀, then press ● REC and the button on its right simultaneously.
(6) First press ❚❚ on the VCR, and after a few seconds press ❚❚ on your camcorder to start inserting the new scene.
Inserting automatically stops near the zero point on the tape counter. Your camcorder automatically returns to the recording pause mode.



To change the insert end point
Press ZERO SET MEMORY again after step 5 to erase the ZERO SET MEMORY indicator and begin from step 3.

Note
The picture and sound recorded on the portion between the insert start and end points will be erased when you insert the new scene.

If you insert scenes on the tape recorded with other camcorder (including other DCR-TRV15/TRV17)
The picture and sound may be distorted. We recommend that you insert scenes on a tape recorded with your camcorder.

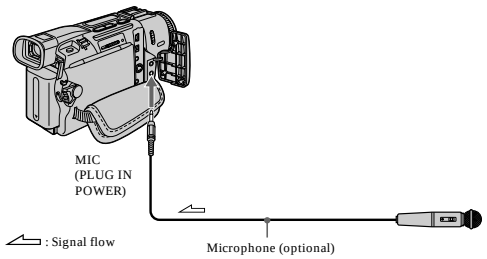
When the inserted picture is played back
The picture and sound may be distorted at the end of the inserted portion. This is not a malfunction.
The picture and sound at the start point and the end point may be distorted in the LP mode.

To insert a scene without setting the insert end point
Skip steps 3 and 4. Press ■ when you want to stop inserting.

Audio dubbing

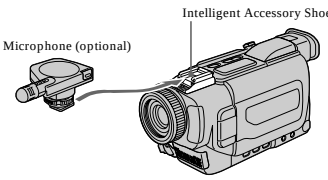
You can record an audio sound to add to the original sound on a tape by connecting audio equipment or a microphone. If you connect the audio equipment, you can add sound to your recorded tape by specifying starting and ending points. The original sound will not be erased.
Select one of the following connections to add an audio sound.

Connecting the microphone with the MIC jack

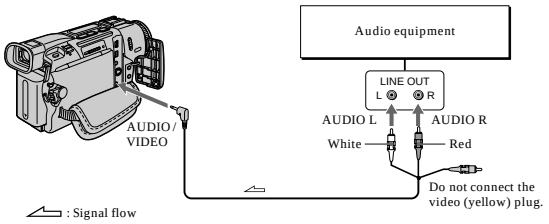


You can check the recorded picture and sound by connecting your camcorder to a TV with the A / V connecting cable.
The recorded sound is not output from a speaker. Check the sound by using the TV or headphones.

Connecting the microphone with the intelligent accessory shoe



Dubbing with the AUDIO/VIDEO jack



Dubbing with the built-in microphone

No connection is necessary.

Note

When dubbing with the AUDIO / VIDEO jack or the built-in microphone, pictures are not output through S VIDEO jack or the AUDIO / VIDEO jack. Check the recorded picture on the screen. You can check the recorded sound by using headphones.

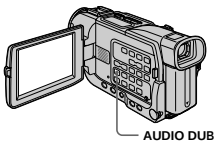
If you make all the connections

The audio input to be recorded will take precedence over others in the following order.

- MIC (PLUG IN POWER) jack
- Intelligent accessory shoe
- AUDIO / VIDEO jack
- Built-in microphone

Adding an audio sound on a recorded tape

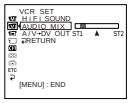
(1) Insert the recorded tape into your camcorder.
(2) Set the POWER switch to VCR on your camcorder.
(3) Locate the recording start point by pressing ► on the Remote Commander. Then press ❚❚ at the point where you want to start recording to set your camcorder to the playback pause mode.
(4) Press AUDIO DUB. The green ➲❚❚ indicator appears on the screen.
(5) Press ❚❚ on your camcorder and start playing back the audio you want to record at the same time.
The new sound is recorded in stereo 2 (ST2) during playback.
(6) Press ■ on your camcorder at the point where you want to stop recording.



Monitoring the new recorded sound

To play back the sound

Adjust the balance between the original sound (ST1) and the new sound (ST2) by selecting AUDIO MIX in in the menu settings (p. 98).



Five minutes after when you disconnect the power source or remove the battery pack, the setting of AUDIO MIX returns to the original sound (ST1) only. The default setting is original sound only.

Notes

- New sound cannot be recorded on a tape already recorded in the 16-bit mode (32 kHz, 44.1 kHz or 48 kHz) (p. 101).
- New sound cannot be recorded on a tape already recorded in the LP mode (p. 101).
- You cannot add audio with the i DV IN / OUT jack.
- You cannot add audio on the blank portion of the tape.

If an i.LINK cable (DV connecting cable) (optional) is connected to your camcorder

You cannot add a sound to a recorded tape.

To add new sound more precisely

Press ZERO SET MEMORY on the Remote Commander at the point where you want to stop recording later in the playback mode.
Carry out steps 3 to 5. Recording automatically stops at the point where ZERO SET MEMORY was pressed.

We recommend that you add new sound on a tape recorded with your camcorder

If you add new sound on a tape recorded with another camcorder (including other DCR-TRV15 / TRV17), the sound quality may become worse.

If you set the write-protect tab of the tape to lock

You cannot record on a tape. Slide the write-protect tab to release the write protection.

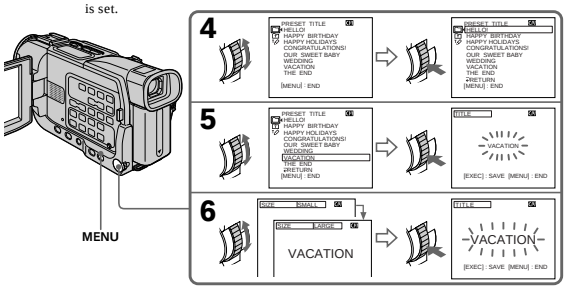
Superimposing a title

CM only

If you use a tape with cassette memory, you can superimpose the title. When you play back the tape, the title is displayed for five seconds from the point where you superimposed it.

You can select one of eight preset titles and two custom titles (p. 92). You can also select the color, size and position of titles.

(1) In CAMERA or VCR mode, press MENU to display the menu.
(2) Turn the SEL / PUSH EXEC dial to select in the menu settings, then press the dial.
(3) Turn the SEL / PUSH EXEC dial to select TITLE then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select the desired title, then press the dial.
The title flashes.
(6) Change the color, size, or position, if necessary.
① Turn the SEL / PUSH EXEC dial to select the COLOR, SIZE or POSITION, then press the dial. The item appears.
② Turn the SEL / PUSH EXEC dial to select the desired item, then press the dial.
③ Repeat steps ① and ② until the title is laid out as desired.
(7) Press the SEL / PUSH EXEC dial again to complete the setting.
In the recording, playback or playback pause mode:
The "TITLE SAVE" indicator appears on the screen for five seconds and the title is set.
In the standby mode:
The "TITLE" indicator appears. And when you press START / STOP to start recording, "TITLE SAVE" appears on the screen for five seconds and the title is set.



If you set the write-protect tab to lock
You cannot superimpose or erase the title. Slide the write-protect tab to release the write protection.

To use the custom title
If you want to use the custom title, select in step 4.

If the tape has a blank portion
You cannot superimpose a title on the portion.

If the tape has a blank portion in the middle of the recorded parts
The title may not be displayed correctly.

The titles superimposed with your camcorder
- They are displayed by only the DV format video equipment with index titler function.
- The point you superimposed the title may be detected as an index signal when searching a recording with other video equipment.

If the tape has too many index signals
You may not be able to superimpose a title because the memory is full. In this case, delete data you do not need.

Not to display titles
Set TITLE DSPL to OFF in the menu settings (p. 100).

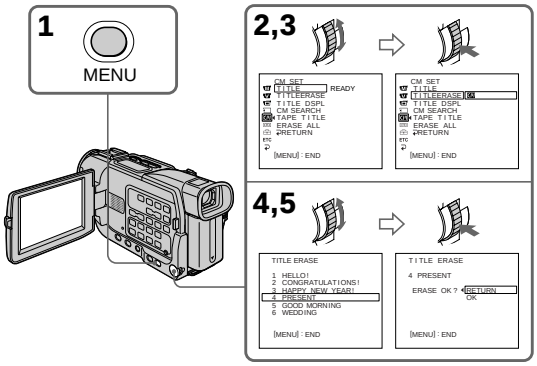
Title setting
- The title color changes as follows:
  WHITE ↔ YELLOW ↔ VIOLET ↔ RED ↔ CYAN ↔ GREEN ↔ BLUE
- The title size changes as follows:
  SMALL ↔ LARGE
  You cannot input 13 characters or more for a LARGE size.
- If you select the title size “SMALL,” you have 9 choices for the title position.
  If you select the title size “LARGE,” you have 8 choices for the title position.

One cassette can have up to about 20 titles, if one title consists of five characters
However, if the cassette memory is full with date, photo and cassette label data, one cassette can have only up to about 11 titles with five characters each.
Cassette memory capacity is as follows:
- 6 date data (maximum)
- 12 photo data (maximum)
- 1 cassette label (maximum)

If the “ FULL” mark appears
The cassette memory is full. If you erase the title in the cassette, you can label it.

Erasing a title

(1) Set the POWER switch to CAMERA or VCR, and then press MENU to display the menu.
(2) Turn the SEL / PUSH EXEC dial to select in the menu setting, then press the dial.
(3) Turn the SEL / PUSH EXEC dial to select TITLEERASE, then press the dial.
Title erase display appears.
(4) Turn the SEL / PUSH EXEC dial to select the title you want to erase, then press the dial.
“ERASE OK ?” indicator appears.
(5) Make sure the title is the one you want to erase, and turn the SEL / PUSH EXEC dial to select OK, then press the dial. OK changes to EXECUTE.
(6) Turn the SEL / PUSH EXEC dial to select EXECUTE, then press the dial.
ERASING indicator flashes, then COMPLETE indicator appears.



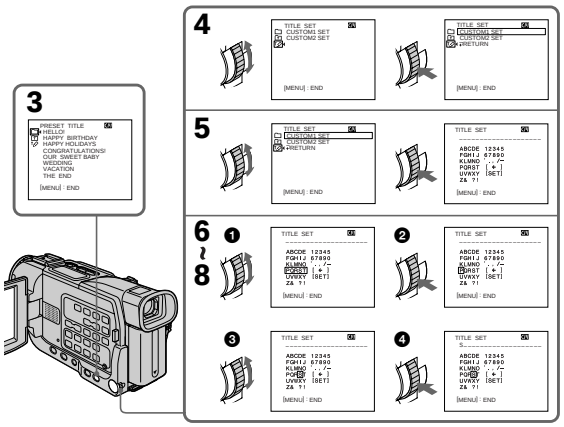
To cancel erasing a title
Select RETURN in step 6.

Making your own titles

CM only

You can make up to two titles and store them in cassette memory. Each title can have up to 20 characters.

(1) Press MENU to display the menu in CAMERA or VCR mode.
(2) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(3) Turn the SEL / PUSH EXEC dial to select TITLE, then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select the first line (CUSTOM1 SET) or second line (CUSTOM2 SET), then press the dial.
(6) Turn the SEL / PUSH EXEC dial to select the column of the desired character, then press the dial.
(7) Turn the SEL / PUSH EXEC dial to select the desired character, then press the dial.
(8) Repeat steps 6 and 7 until you have selected all characters and completed the title.
(9) To finish making your own titles, turn the SEL / PUSH EXEC dial to select [SET], then press the dial.
(10) Press MENU to make the title menu disappear.



To change a title you have stored

In step 5, select CUSTOM1 SET or CUSTOM2 SET, depending on which title you want to change, then press the SEL / PUSH EXEC dial. Turn the SEL / PUSH EXEC dial to select [←], then press the dial to delete the title. The last character is erased. Enter the new title as desired.

If you take five minutes or longer to enter characters in the standby mode while a cassette is in your camcorder
The power automatically goes off. The characters you have entered remain stored in memory. Set the POWER switch to OFF (CHG) once and then to CAMERA again, then proceed from step 1.
We recommend setting the POWER switch to VCR or removing the cassette so that your camcorder does not automatically turn off while you are entering title characters.

To delete the title
Select [←]. The last character is erased.

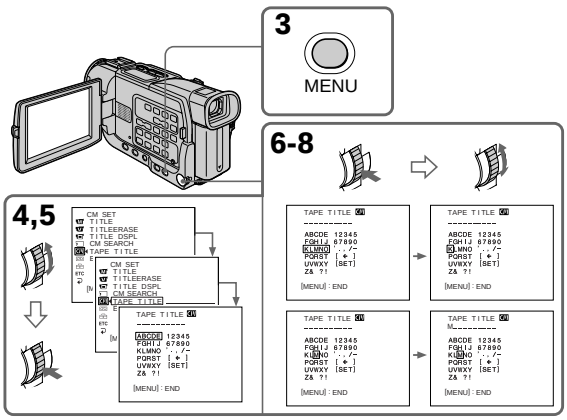
To enter a space
Select [Z& ?!], then select the blank part.

Labeling a cassette

CM only

If you use a tape with cassette memory, you can label a cassette. The label can consist of up to 10 characters and is stored in cassette memory. When you insert the labelled cassette and turn the power on, the label is displayed for about five seconds.

(1) Insert the cassette you want to label.
(2) Set the POWER switch to VCR.
(3) Press MENU to display the menu.
(4) Turn the SEL / PUSH EXEC dial to select CM, then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select TAPE TITLE, then press the dial. Tape title display appears.
(6) Turn the SEL / PUSH EXEC dial to select the column of the desired character, then press the dial.
(7) Turn the SEL / PUSH EXEC dial to select the desired character, then press the dial.
(8) Repeat steps 6 and 7 until you finish the label.
(9) Turn the SEL / PUSH EXEC dial to select [SET], then press the dial. The label is stored in memory.



Labeling a cassette

To erase a character

In step 6 turn the SEL / PUSH EXEC dial to select [←], then press the dial. The last character is erased.

To change the label you have made

Insert the cassette to change the label, and operate in the same way to make a new label.

If you set the write-protect tab of the tape to lock
You cannot label the tape. Slide the write-protect tab to release the write protection.

If the CM mark appears in step 5
The cassette memory is full. If you erase the title in the cassette, you can label it.

If you have superimposed titles in the cassette
When the label is displayed, up to four titles also appear.

When the "-----" indicator has fewer than 10 spaces
The cassette memory is full.
The "-----" indicates the number of characters you can select for the label.

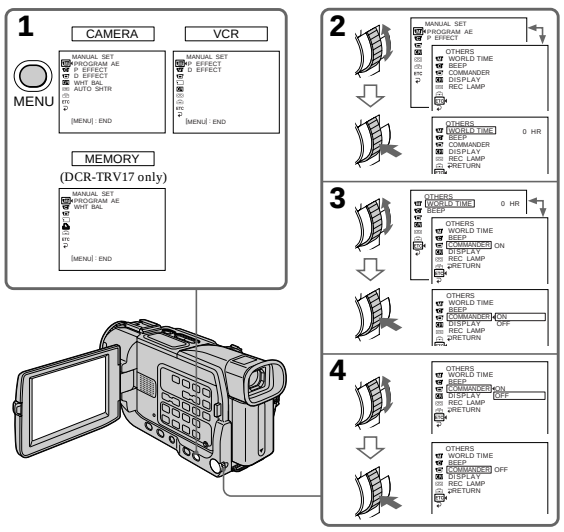
To enter a space
Select [Z& ?!], then select the blank part.

Changing the menu settings

To change the mode settings in the menu settings, select the menu items with the SEL / PUSH EXEC dial. The factory settings can partially changed. First, select the icon, then the menu item and then the mode.

(1) In CAMERA, MEMORY (DCR-TRV17 only) or VCR mode, press MENU.
(2) Turn the SEL / PUSH EXEC dial to select the desired icon, then press the dial to set.
(3) Turn the SEL / PUSH EXEC dial to select the desired item, then press the dial to set.
(4) Turn the SEL / PUSH EXEC dial to select the desired mode, then press the dial to set.
(5) If you want to change other items, select ↩ RETURN and press the dial, then repeat steps 2 to 4.

For details, see "Selecting the mode setting of each item" (p. 97).



Changing the menu settings

To make the menu display disappear

Press MENU.

Menu items are displayed as the following icons:

- MANUAL SET
- CAMERA SET
- VCR SET
- LCD / VF SET
- MEMORY SET (DCR-TRV17 only)
- PRINT SET (DCR-TRV17 only)
- CM SET
- TAPE SET
- SETUP MENU
- OTHERS

Selecting the mode setting of each item

● is the default setting.

Menu items differ depending on the position of the POWER switch. The screen shows only the items you can operate at the moment.

Icon/item	Mode	Meaning	POWER switch
PROGRAM AE	—	To suit your specific shooting requirement (p. 49)	CAMERA MEMORY
P EFFECT	—	To add special effects like those in films or on the TV to images (p. 45, 57).	VCR CAMERA
D EFFECT	—	To add special effects using the various digital functions (p. 46, 58)	VCR CAMERA
WHT BAL	—	To adjust the white balance (p. 41).	CAMERA MEMORY
AUTO SHTR	● ON	To automatically activate the electronic shutter when shooting in bright conditions.	CAMERA
	OFF	Not to automatically activate the electronic shutter even when shooting in bright conditions.	
SELFTIMER	● OFF	Not to use the self-timer function	CAMERA MEMORY
	ON	To use the self-timer function	
D ZOOM	● OFF	To deactivate the digital zoom. Up to 10× zoom is carried out.	CAMERA
	20×	To activate the digital zoom. More than 10× to 20× zoom is performed digitally (p. 24).	
	120×	To activate the digital zoom. More than 10× to 120× zoom is performed digitally (p. 24).	
16:9WIDE	● OFF	—	CAMERA
	ON	To record a 16:9 wide picture (p. 42).	
STEADYSHOT	● ON	To compensate for camera-shake.	CAMERA
	OFF	To cancel the SteadyShot function. Natural pictures are produced when shooting a stationary object with a tripod.	
N.S. LIGHT	● ON	To use the NightShot Light function (p. 27).	CAMERA MEMORY
	OFF	To cancel the NightShot Light function.	

(continued on the following page)

Icon/item	Mode	Meaning	POWER switch
FRAME REC	● OFF	To deactivate Cut recording function.	CAMERA
	ON	To activate Cut recording function (p. 56).	
INT. REC	ON	To activate Interval recording function (p. 54).	CAMERA
	● OFF	To deactivate Interval recording function.	
	SET	To set waiting time and recording time for Interval recording function (p. 54).	
HiFi SOUND	● STEREO	To play back a stereo tape or dual sound track tape with main and sub sound (p. 159).	VCR
	1	To play back a stereo tape with the left sound or a dual sound tape with main sound.	
	2	To play back a stereo tape with the right sound or a dual sound track tape with sub sound.	
AUDIO MIX	—	To adjust the balance between the stereo 1 and stereo 2 (p. 87). ST1 ▲ ST2	VCR
A/V→DV OUT	● OFF	To output digital images and sound in analog format using your camcorder.	VCR
	ON	To output analog images and sound in digital format using your camcorder (p. 79).	
LCD BRIGHT	—	To adjust the brightness on the LCD screen with the SEL/PUSH EXEC dial. To darken ▲ To lighten	VCR CAMERA MEMORY
LCD B. L.	● BRT NORMAL	To set the brightness on the LCD screen normal.	VCR CAMERA MEMORY
	BRIGHT	To brighten the LCD screen.	
LCD COLOR	—	To adjust the color on the LCD screen, turn and press the SEL/PUSH EXEC dial. To get low-intensity ▲ To get high-intensity	VCR CAMERA MEMORY
VF B.L.	● BRT NORMAL	To set the brightness on the viewfinder screen to normal.	VCR CAMERA MEMORY
	BRIGHT	To brighten the viewfinder screen.	

Notes on the SteadyShot function
- The SteadyShot function will not correct excessive camera-shake.
- Attachment of a conversion lens (optional) may influence the SteadyShot function.

Notes on LCD B.L. and VF B.L.
- When you select "BRIGHT", battery life is reduced by about 10 percent during recording.
- When you use power sources other than the battery pack, "BRIGHT" is automatically selected.

Icon/item	Mode	Meaning	POWER switch
* STILL SET			
PIC MODE	● SINGLE	Not to record continuously.	MEMORY
	MULTI SCRN	To record nine still picutures continuously (p. 114).	
QUALITY	● FINE	To record still pictures in the fine image quality mode (p. 106).	VCR MEMORY
	STANDARD	To record still pictures in the standard image quality mode (p. 106).	
MOVIE SET			
IMAGE SIZE	● 320 × 240	To record moving pictures in 320 × 240 size (p. 108)	VCR MEMORY
	160 × 112	To record moving pictures in 160 × 112 size (p. 108)	
REMAIN	● AUTO	To display the remaining capacity of the "Memory Stick" in the following cases: • For 5 seconds after setting the POWER switch to MEMORY • For 5 seconds after inserting a "Memory Stick" into your camcorder in MEMORY or VCR mode • When the capacity of the "Memory Stick" is less than 1 minute in MEMORY mode • For 5 seconds after completing a moving picture recording	VCR MEMORY
	ON	To always display the remaining capacity of the "Memory Stick"	
PRINT MARK	ON	To write a print mark on the recorded still images you want to print out later (p. 146).	VCR MEMORY
	● OFF	To cancel print marks on still pictures.	
PROTECT	ON	To protect selected still pictures against accidental erasure (p. 143).	VCR MEMORY
	● OFF	Not to protect still pictures.	
SLIDE SHOW	—	To play back images in a continuous loop (p. 142).	MEMORY
DELETE ALL	—	To delete all the unprotected images (p. 144).	MEMORY

* DCR-TRV17 only

(continued on the following page)

Icon/item	Mode	Meaning	POWER switch
* FORMAT	● RETURN	To cancel formatting.	MEMORY
	OK	To format an inserted "Memory Stick." 1. Select FORMAT with the SEL/PUSH EXEC dial, then press the dial. 2. Turn the SEL/PUSH EXEC dial to select OK, then press the dial. 3. After "EXECUTE" appears, press the SEL/PUSH EXEC dial. "FORMATTING" flashes during formatting. "COMPLETE" appears when formatting is finished.	
PHOTO SAVE	—	To duplicate mini DV still pictures on "Memory Stick"(p. 127).	VCR
* 9PIC PRINT	● RETURN	To cancel prints of split screen	MEMORY
	SAME	To make prints of same split screen (p. 148)	
	MULTI	To make prints of different split screen (p. 148)	
	MARKED	To make prints of images with print marks in recording order (p. 148)	
DATE/TIME	● OFF	To make prints without the recording date and time	MEMORY
	DATE	To make prints with the recording date (p. 148)	
	DAY&TIME	To make prints with the recording date and time (p. 148)	
TITLE	—	To superimpose a title or make your own title. (p. 89, 92)	VCR CAMERA
TITLEERASE	—	To erase the title you have superimposed (p. 91).	VCR CAMERA
TITLE DSPL	● ON	To display the title you have superimposed.	VCR
	OFF	Not to display the title.	
CM SEARCH	● ON	To search using cassette memory (p. 61).	VCR
	OFF	To search without using cassette memory.	
TAPE TITLE	—	To label a cassette (p. 94).	VCR CAMERA
ERASE ALL	—	To erase all the data in cassette memory.	VCR CAMERA

* DCR-TRV17 only

Notes on formatting (DCR-TRV17 only)
- Supplied or optional "Memory Stick"s have been formatted at factory. Formatting with this camcorder is not required.
- Do not turn the POWER switch or press any button while the display shows "FORMATTING."
- You cannot format the "Memory Stick" if the write-protect tab on the "Memory Stick" is set to LOCK.
- Format again if the message "⚠" appears.

Formatting erases all information on the "Memory Stick" (DCR-TRV17 only)
Check the contents of the "Memory Stick" before formatting.
- Formatting erases sample images on the "Memory Stick."
- Formatting erases the protected image data on the "Memory Stick."

Note on PRINT SET (DCR-TRV17 only)
9PIC PRINT and DATE/TIME are displayed only when an external printer (optional) is connected to the intelligent accessory shoe.

Icon/item	Mode	Meaning	POWER switch
REC MODE	● SP	To record in the SP (Standard Play) mode.	VCR CAMERA
	LP	To increase the recording time to 1.5 times the SP mode.	
AUDIO MODE	● 12BIT	To record in the 12-bit mode (two stereo sounds).	VCR CAMERA
	16BIT	To record in the 16-bit mode (the one stereo sound with high quality).	
REMAIN	● AUTO	To display the remaining tape bar: • for about 8 seconds after your camcorder is turned on and calculates the remaining amount of tape. • for about 8 seconds after a cassette is inserted and your camcorder calculates the remaining amount of tape. • for about 8 seconds after ► is pressed in VCR mode. • for about 8 seconds after DISPLAY is pressed to display the screen indicators. • for the period of tape rewinding, forwarding or picture search in the VCR mode.	VCR CAMERA
	ON	To always display the remaining tape indicator.	
CLOCK SET	—	To set the date or time (p. 18).	CAMERA MEMORY
AUTO TV ON	● OFF	—	VCR CAMERA MEMORY
	ON	To automatically turn on a Sony TV when using the laser link function (P. 37).	
TV INPUT	● VIDEO1 VIDEO2 VIDEO3	To switch the video input on a Sony TV when using the laser function (P. 37).	VCR CAMERA MEMORY
	OFF	—	
LTR SIZE	● NORMAL	To display selected menu items in normal size.	VCR CAMERA MEMORY
	2×	To display selected menu items at twice the normal size.	
DEMO MODE	● ON	To make the demonstration appear.	CAMERA
	OFF	To cancel the demonstration mode.	

Notes on the LP mode
- When you record a tape in the LP mode on your camcorder, we recommend playing the tape on your camcorder. When you play back the tape on other camcorders or VCRs, noise may occur in pictures or sound.
- When you record in the LP mode, we recommend using a Sony Excellence/Master cassette so that you can get the most out of your camcorder.
- You cannot make audio dubbing on a tape recorded in the LP mode. Use the SP mode for the tape to be audio dubbed.
- When you record in the SP and LP modes on one tape or you record some scenes in the LP mode, the playback picture may be distorted or the time code may not be written properly between scenes.

Notes on AUDIO MODE
- You cannot dub audio sound on a tape recorded in the 16-bit mode.
- When playing back a tape recorded in the 16-bit mode, you cannot adjust the balance in AUDIO MIX.

Notes on DEMO MODE
- You cannot select DEMO MODE when a cassette is inserted in your camcorder.
- DEMO MODE is set to STBY (Standby) at the factory and the demonstration starts about 10 minutes after you have set the POWER switch to CAMERA without a cassette inserted. Note that you cannot select STBY of DEMO MODE in the menu settings.
- When NIGHTSHOT is set to ON, the "NIGHTSHOT" indicator appears on the LCD screen or in the viewfinder and you cannot select DEMO MODE in the menu settings.

(continued on following page)

Icon/item	Mode	Meaning	POWER switch
ETC DATA CODE	● DATE/CAM	To display date, time and various settings during playback (p. 32, 130).	VCR MEMORY
	DATE	To display date and time during playback (p. 32, 130, 132).	
WORLD TIME	—	To set the clock to the local time. Turn the SEL/PUSH EXEC dial to set a time difference. The clock changes by the time difference you set here. If you set the time difference to 0, the clock returns to the originally set time.	CAMERA MEMORY
BEEP	● MELODY	To output the melody when you start/stop recording or when an unusual condition occurs on your camcorder.	VCR CAMERA MEMORY
	NORMAL	To output the beep instead of the melody.	
	OFF	To cancel the melody and beep sound.	
COMMANDER	● ON	To activate the Remote Commander supplied with your camcorder.	VCR CAMERA MEMORY
	OFF	To deactivate the Remote Commander to avoid remote control misoperation caused by other VCR's remote control.	
DISPLAY	● LCD	To show the display on the LCD screen and in the viewfinder.	VCR CAMERA MEMORY
	V-OUT/LCD	To show the display on the TV screen, LCD screen and in the viewfinder.	
REC LAMP	● ON	To light up the camera recording lamp at the front of your camcorder.	CAMERA MEMORY
	OFF	To turn the camera recording lamp off so that the person is not aware of the recording.	
VIDEO EDIT	—	To make program and perform video editing (p. 76).	VCR
EDIT SET	—	To adjust and set the synchronicity of your camcorder and a VCR for dubbing in edit set mode (p. 69).	VCR

Note
If you press DISPLAY with DISPLAY set to V-OUT/LCD in the menu settings, the picture from a TV or VCR will not appear on the LCD screen even when your camcorder is connected to outputs on the TV or VCR.

When recording a close subject
When REC LAMP is set to ON, the red camera recording lamp on the front of the camcorder may reflect on the subject if it is close. In this case, we recommend you set REC LAMP to OFF.

In more than five minutes after removing the power source
The "AUDIO MIX", "COMMANDER", "HiFi SOUND", and "WHT BAL" items are returned to their factory settings.
The other menu items are held in memory even when the battery is removed.

Using a "Memory Stick" – introduction

– DCR-TRV17 only
You can record and play back images on a "Memory Stick" supplied with your camcorder. You can easily play back, record or delete images. You can exchange image data with other equipment such as your computer etc. using the USB cable for "Memory Stick" supplied with your camcorder.

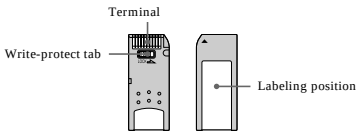
On file format

Still image (JPEG)
Your camcorder compresses image data in JPEG format (extension .jpg).
Moving picture (MPEG)
Your camcorder compresses picture data in MPEG format (extension .mpg).

Typical image data file name
Still image
100-0001: This file name appears on the screen of your camcorder.
Dsc00001.jpg: This file name appears on the display of your personal computer.

Moving picture
MOV00001: This file name appears on the screen of your camcorder.
Mov00001.mpg: This file name appears on the display of your personal computer.

Using a "Memory Stick"



- You cannot record or erase images when the write-protect tab on the "Memory Stick" is set to LOCK.
  The position and shape of the write-protect tab may be different depending on the model.
- We recommend backing up important data.
- Image data may be damaged in the following cases:
  – If you remove the "Memory Stick" or turn the power off while reading or writing.
  – If you use "Memory Stick"s near static electricity or magnetic fields.
- Prevent metallic objects or your finger from coming into contact with the metal parts of the connecting section.
- Stick its label on the labeling position.
- Do not bend, drop or apply strong shock to "Memory Stick"s.
- Do not disassemble or modify "Memory Stick"s.
- Do not let "Memory Stick"s get wet.
- Do not use or keep "Memory Stick"s in locations that are:
  – Extremely hot such as in a car parked in the sun or under the scorching sun.
  – Under direct sunlight.
  – Very humid or subject to corrosive gases.
- When you carry or store a "Memory Stick," put it in its case.

"Memory Stick"s formatted by a computer

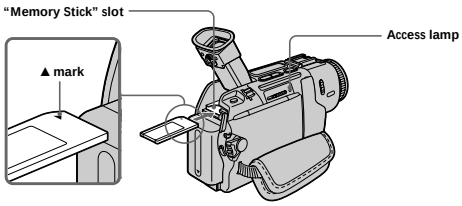
"Memory Stick"s formatted by Windows OS or Macintosh computers do not have a guaranteed compatibility with this camcorder.

Notes on image data compatibility
- Image data files recorded on "Memory Stick"s by your camcorder conform with the Design rule for Camera File system universal standard established by the JEITA (Japan Electronics and Information Technology Industries Association). You cannot play back on your camcorder still images recorded on other equipment (DCR-TRV890E/TRV900/TRV900E or DSC-D700/D770) that does not conform with this universal standard. (These models are not sold in some areas.)
- If you cannot use the "Memory Stick" that is used with other equipment, format it with this camcorder (p. 100). However, formatting erases all information on the "Memory Stick."

- "Memory Stick" and MEMORY STICK are trademarks of Sony Corporation.
- Windows and ActiveMovie, DirectShow are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- Macintosh and Mac OS, QuickTime are trademarks of Apple Computer, Inc.
- All other product names mentioned herein may be the trademarks or registered trademarks of their respective companies.
- Furthermore, "™" and "®" are not mentioned in each case in this manual.

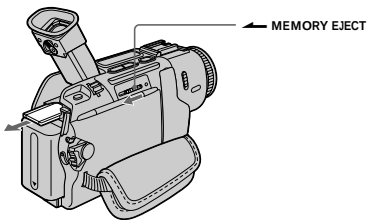
Inserting a "Memory Stick"

Lift up the viewfinder, and insert a "Memory Stick" in the "Memory Stick" slot as far as it can go with the ▲ mark facing up as illustrated.



Ejecting a "Memory Stick"

Slide ◄ MEMORY EJECT in the direction of the arrow.



If you extend the viewfinder to the end
You cannot insert or eject a "Memory Stick."

While the access lamp is lit or flashing
Do not shake or strike your camcorder because your camcorder is reading the data from the "Memory Stick" or recording the data on the "Memory Stick." Do not turn the power off, eject a "Memory Stick" or remove the battery pack. Otherwise, the image data breakdown may occur.

If "⚿ MEMORYSTICK ERROR" is displayed
The "Memory Stick" may be corrupted. If this occurs, use another "Memory Stick."

Selecting still image quality mode

You can select image quality mode in still image recording. The default setting is FINE.

(1) Set the POWER switch to MEMORY or VCR. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MENU to display the menu.
(3) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select STILL SET, then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select QUALITY, then press the dial.
(6) Turn the SEL / PUSH EXEC dial to select the desired image quality, then press the dial.

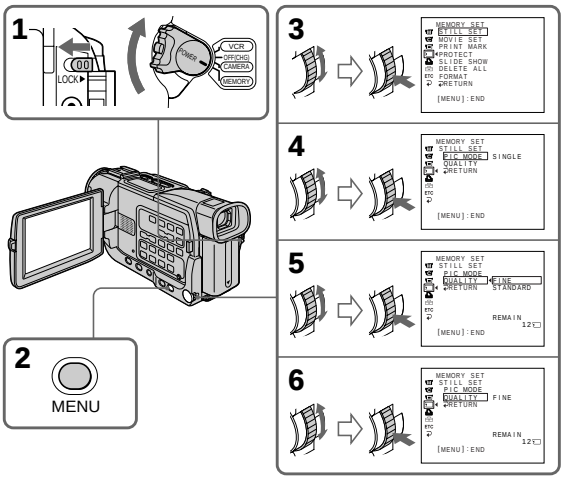


Image quality settings

Setting	Meaning
FINE (FINE)	Use this mode when you want to record high quality images. The image is compressed to about 1/6.
STANDARD (STD)	This is the standard image quality. The image is compressed to about 1/10.

Note
In some cases, changing the image quality mode may not affect the image quality, depending on the types of images you are shooting.

Differences in image quality mode
Recorded images are compressed in JPEG format before being stored in memory. The memory capacity allotted to each image varies depending on the selected image quality mode. Details are shown in the table below.

Image quality mode	Memory capacity
FINE	About 100 KB
STANDARD	About 60 KB

Image quality mode indicator
The image quality mode indicator is not displayed during playback.

Selecting the image size

You can select 320 × 240 or 160 × 112 of the moving picture size.
The default setting is 320 × 240.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MENU to display the menu.
(3) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select MOVIE SET (moving picture), then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select IMAGESIZE, then press the dial.
(6) Turn the SEL / PUSH EXEC dial to select the desired image size, then press the dial.
The indicator changes as follows:
320 ⟷ 160

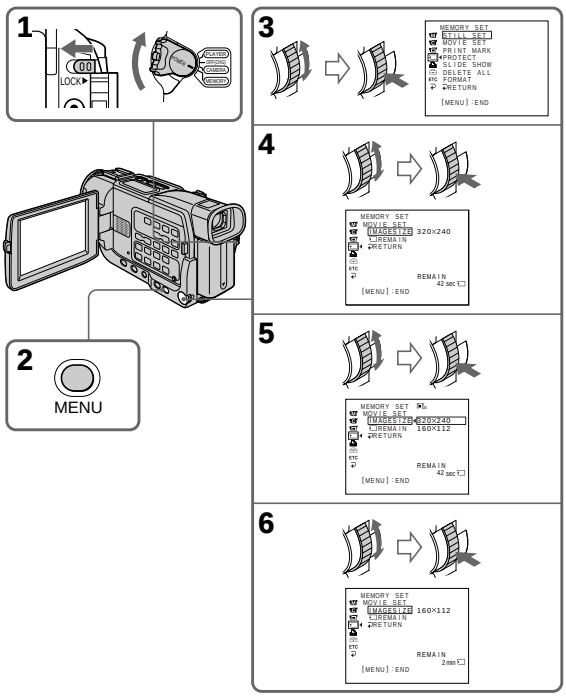


Image size of still pictures
Image size is automatically set to 640 × 480.

Moving picture size settings

Setting	Meaning	Indicator	
		Recording	Playback
320 × 240	Records 320 × 240 moving pictures.	320	320
160 × 112	Records 160 × 112 moving pictures.	160	160

Maximum recording time of moving pictures

Image size	Maximum recording time
320 × 240	15 seconds
160 × 112	60 seconds

Approximate number of still images you can record on a “Memory Stick”

The number of images you can record varies depending on which image quality mode you select and the complexity of the subject.

4MB type (supplied):

FINE (FINE)	40 images
STANDARD (STD)	60 images

8MB type (optional):

FINE (FINE)	81 images
STANDARD (STD)	122 images

16MB type (optional):

FINE (FINE)	164 images
STANDARD (STD)	246 images

32MB type (optional):

FINE (FINE)	329 images
STANDARD (STD)	494 images

64MB type (optional):

FINE (FINE)	659 images
STANDARD (STD)	988 images

128MB type (optional):

FINE (FINE)	1319 images
STANDARD (STD)	1978 images

Approximate time of moving pictures you can record on a “Memory Stick”

The time of moving pictures you can record varies depending on which image size you select and the complexity of the subject.

4MB type (supplied):

Picture size	160 × 112	320 × 240
Recording time	2 min. 40 sec.	40 sec.

8MB type (optional):

Picture size	160 × 112	320 × 240
Recording time	5 min. 20 sec.	1 min. 20 sec.

16MB type (optional):

Picture size	160 × 112	320 × 240
Recording time	10 min. 40 sec.	2 min. 40 sec.

32MB type (optional):

Picture size	160 × 112	320 × 240
Recording time	21 min. 20 sec.	5 min. 20 sec.

64MB type (optional):

Picture size	160 × 112	320 × 240
Recording time	42 min. 40 sec.	10 min. 40 sec.

128MB type (optional):

Picture size	160 × 112	320 × 240
Recording time	85 min. 20 sec.	21 min. 20 sec.

Recording still images on “Memory Stick”s – Memory photo recording

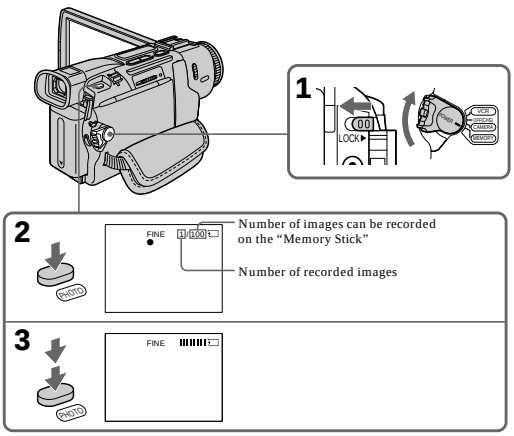
– DCR-TRV17 only

You can record still pictures on “Memory Stick”s.

Before operation

Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Keep pressing PHOTO lightly until the desired still picture appears. The green ● mark stops flashing, then lights up. The brightness of the picture and focus are adjusted, being targeted for the middle of the picture and are fixed. Recording does not start yet.
(3) Press PHOTO deeper. The image displayed on the screen will be recorded on a “Memory Stick.” Recording is complete when the bar scroll indicator disappears.



When the POWER switch is set to MEMORY

The following functions do not work:
– Wide TV mode
– Digital zoom
– SteadyShot function
– Super NightShot
– Fader
– Picture effect
– Digital effect
– Title
– Low lux mode (The indicator flashes.)
– Sports lesson mode (The indicator flashes.)

While you are recording a still image

You can neither turn off the power nor press PHOTO.

When you press PHOTO on the Remote Commander

Your camcorder immediately records the image that is on the screen when you press the button.

Note

When recording still images at step 2 with the PHOTO button pressed lightly, the image momentarily flickers. This is not a malfunction.

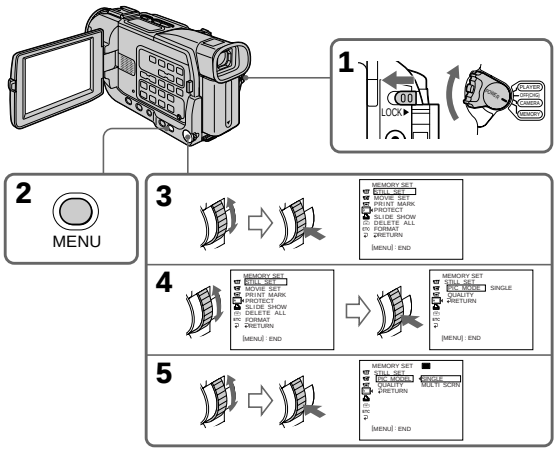
Recording images continuously

You can record still pictures continuously. Select one of the two modes described below before recording.

Multi screen mode (Recording image size is 640 × 480)
You can record nine still pictures continuously on a single page.

While pressing down PHOTO, your camcorder continuously record maximum number of still pictures.
When you stop pressing, the recording stops.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MENU to display the menu.
(3) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select STILL SET, then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select PIC MODE, then press the dial.
(6) Turn the SEL / PUSH EXEC dial to select MULTI SCRN, then press the dial.



If the capacity of the "Memory Stick" becomes full

"FULL" appears on the screen, and you cannot record still pictures on this "Memory Stick."

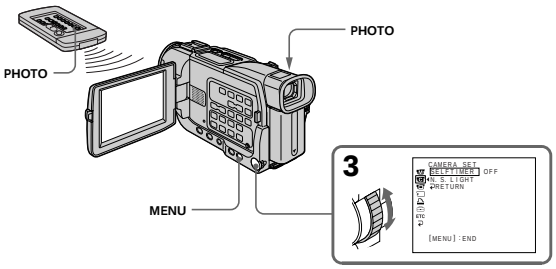
Continuous shooting settings

Setting	Meaning (indicator on the screen)
SINGLE	Your camcorder shoots one image at a time. (no indicator)
MULTI SCRN	Your camcorder shoots nine still images at about 0.5 sec intervals and displays the images on a single page divided into nine boxes. ( )

Self-timer memory photo recording

You can record still images on "Memory Stick"s with the self-timer. You can use the Remote Commander for this operation.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK is set to the left (unlock) position.
(2) Press MENU to display the menu settings in the standby mode.
(3) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select SELFTIMER, then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select ON, then press the dial.
(6) Press MENU to make the menu settings disappear.
(7) Press PHOTO deeper.
Self-timer starts counting down from 10 with a beep sound. In the last two seconds of the countdown, the beep sound gets faster, then recording starts automatically.



To cancel self-timer recording

Set SELFTIMER to OFF in the menu settings while your camcorder is in the standby mode. You cannot cancel self-timer recording with Remote Commander.

Note
The self-timer recording mode is automatically cancelled when:
– Self-timer recording is finished.
– The POWER switch is set to OFF (CHG) or VCR.

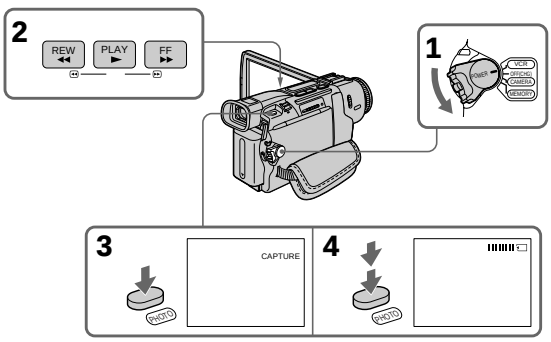
To check the image to be recorded
You can check the image with pressing PHOTO lightly, then press it deeper to start the self-timer recording.

Recording an image from a tape as a still image

– DCR-TRV17 only
Your camcorder can read moving picture data recorded on a tape and record it as a still image on a "Memory Stick".

Before operation
• Insert a recorded tape into your camcorder.
• Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to VCR.
(2) Press ►. The picture recorded on the tape is played back.
(3) Keep pressing PHOTO lightly until the picture from the tape freezes. "CAPTURE" appears on the screen. Recording does not start yet.
(4) Press PHOTO deeper. The image displayed on the screen will be recorded on a "Memory Stick." Recording is complete when the bar scroll indicator disappears.



When the access lamp is lit or flashing
Never shake or strike the unit. As well do not turn the power off , eject a "Memory Stick" or remove the battery pack. Otherwise, the image data breakdown may occur.

If " " appears on the screen
The inserted "Memory Stick" is incompatible with your camcorder because its format does not conform with your camcorder. Check the format of the "Memory Stick."

If you press PHOTO lightly in the playback mode
Your camcorder stops momentarily.

Sound recorded on a tape
You cannot record the audio from a tape.

Titles have already recorded on tapes
You cannot record the titles on "Memory Stick"s. The title does not appear while you are recording a still picture with PHOTO.

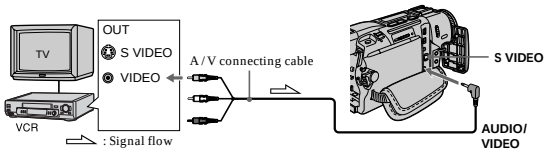
When you press PHOTO on the Remote Commander
Your camcorder immediately records the image that is on the screen when you press the button.

Recording a still image from other equipment

Before operation
Set DISPLAY to LCD in the menu settings. (The default setting is LCD.)

(1) Set the POWER switch to VCR.
(2) Play back the recorded tape, or turn the TV on to see the desired program. The image of the other equipment is displayed on the screen.
(3) Follow steps 3 and 4 on page 117.

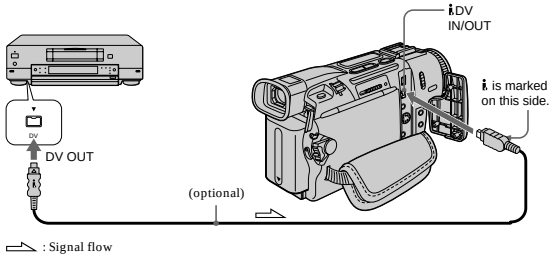
Using the A/V connecting cable



Connect the yellow plug of the A / V connecting cable to the video jack on the VCR or the TV.

If your TV or VCR has an S video jack
Connect using an S video cable (optional) to obtain high-quality pictures.
With this connection, you do not need to connect the yellow (video) plug of the A / V connecting cable.
Connect an S video cable (optional) to the S video jacks of both your camcorder and the TV or VCR.
This connection produces higher quality DV format pictures.

Using the i.LINK cable (DV connecting cable)

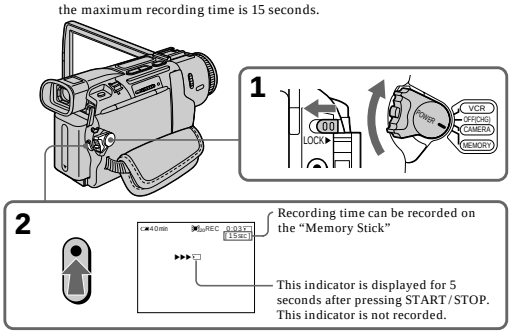


Recording moving pictures on "Memory Stick"s – MPEG movie recording

– DCR-TRV17 only
You can record moving pictures with sound on "Memory Stick"s.

Before operation
Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press START / STOP. Your camcorder starts recording. The camera recording lamp located on the front of your camcorder lights up. When IMAGESIZE in the menu settings is set to 160 × 112, the maximum recording time is 60 seconds. However, when IMAGESIZE in the menu settings is set to 320 × 240, the maximum recording time is 15 seconds.



To stop recording
Press START / STOP.

Note
Sound is recorded in monaural.

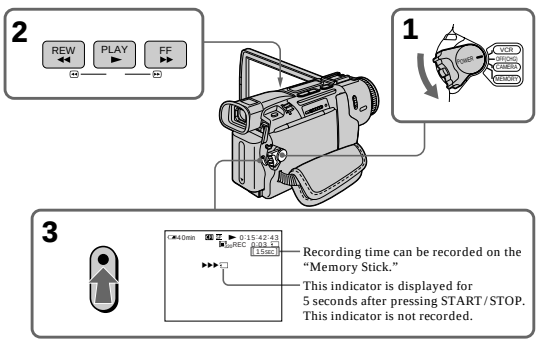
When the POWER switch is set to MEMORY
The following functions do not work:
– Wide TV
– Digital zoom
– SteadyShot function
– Super NightShot
– Fader
– Picture effect
– Digital effect
– Title
– Low lux mode (The indicator flashes.)
– Sports lesson mode (The indicator flashes.)

Recording a picture from a tape as a moving picture

– DCR-TRV17 only
Your camcorder can read moving picture data recorded on a tape and record it as a moving picture on a "Memory Stick." Your camcorder can also take in moving picture data through the input connector and record it as a moving picture on a "Memory Stick."

Before operation
• Insert a recorded tape into your camcorder.
• Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to VCR.
(2) Press ►. The picture recorded on the tape is played back.
(3) Press START / STOP on your camcorder at the scene where you want to start recording from. The camera recording lamp located on the front of your camcorder lights up. When IMAGESIZE in the menu settings is set to 160 × 112, the maximum recording time is 60 seconds. However, when IMAGESIZE in the menu settings is set to 320 × 240, the maximum recording time is 15 seconds.



To stop recording
Press START / STOP.

Notes
- Sound recorded in 48 kHz is converted to one in 32 kHz when recording images from a tape to "Memory Stick"s.
- Sound recorded in stereo is converted to monaural sound when recording from tapes.

When the access lamp is lit or flashing
Do not shake or strike the unit. As well do not turn the power off , eject a "Memory Stick" or remove the battery pack. Otherwise, the image data breakdown may occur.

Titles have already recorded on tapes
You cannot record the titles on "Memory Stick"s. The title does not appear while you are recording a moving image with START/STOP.

Various settings when recorded
You cannot record the various settings when recorded.

If "⚠ AUDIO ERROR" is displayed
Sound that cannot be recorded by your camcorder has been recorded. Connect the A/V connecting cable to input images from an external unit used to play back the image.

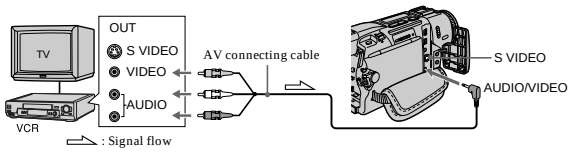
During recording on "Memory Stick"
- You cannot use the PB ZOOM function.
- You cannot record data codes from tape

Recording a moving picture from other equipment

Before operation
Set DISPLAY to LCD in the menu settings. (The default setting is LCD.)

(1) Set the POWER switch to VCR.
(2) Play back the recorded tape, or turn the TV on to see the desired program. The image of the other equipment is displayed on the screen.
(3) Follow steps 3 on page 121.

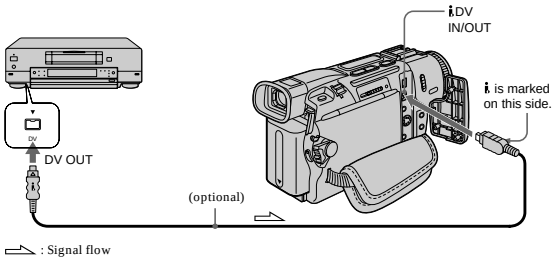
Using the A/V connecting cable



Connect the yellow plug of the A/V connecting cable to the video jack on the VCR or the TV.
Sound is recorded in monaural.

If your TV or VCR has an S video jack
Connect using an S video cable (optional) to obtain high-quality pictures.
With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.
Connect an S video cable (optional) to the S video jacks of both your camcorder and the TV or VCR.
This connection produces higher quality DV format pictures.

Using the i.LINK cable (DV connecting cable)



Note
The "⚠" flashes in the following instances. If this happens, eject and insert the "Memory Stick" again, and record distortion-free images.
– When recording on a tape in a poor recording state, for example, on a tape that has been repeatedly used for dubbing
– When attempting to input images that are distorted due to poor radio wave reception when a TV tuner unit is in use

Superimposing a still picture in a "Memory Stick" on a moving picture – MEMORY MIX

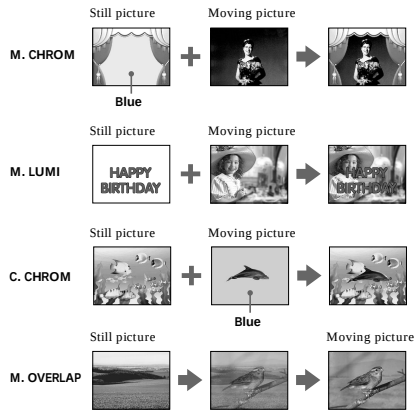
– DCR-TRV17 only
You can superimpose a still picture you have recorded on a "Memory Stick" on the top of the moving picture you are recording.

M. CHROM (Memory chromakey)
You can swap a blue area of a still picture such as an illustration or a frame with a moving picture.

M. LUMI (Memory luminancekey)
You can swap a brighter area of a still picture such as a handwritten illustration or title with a moving picture. Record a title on a "Memory Stick" before a trip or event for convenience.

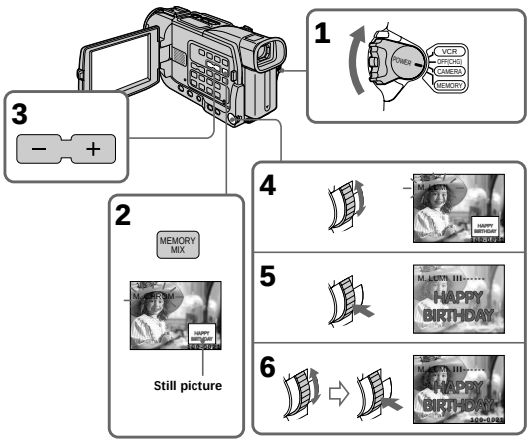
C. CHROM (Camera chromakey)
You can superimpose a moving picture on the top of a still picture such as a picture can be used as background. Shoot the subject against a blue background. The blue area of the moving picture will be swapped with a still picture.

M. OVERLAP (Memory overlap)
You can make a moving image fade in on top of a still image.



Before operation
- Insert a tape for recording into your camcorder.
- Insert a recorded "Memory Stick" into your camcorder.

(1) Set the POWER switch to CAMERA or MEMORY.
Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MEMORY MIX in the standby mode.
The last recorded or last composed image appears on the lower part of the screen as a thumbnail image.
(3) Press MEMORY+/– to select the still picture you want to superimpose.
To see the previous image, press MEMORY –. To see the next image, press MEMORY+.
(4) Turn the SEL/PUSH EXEC dial to select the desired mode.
The mode changes as follows:
M. CHROM ↔ M. LUMI ↔ C. CHROM ↔ M. OVERLAP
(5) Press the SEL/PUSH EXEC dial.
The still picture is superimposed on the moving picture. Your camcorder automatically returns to the standby mode.
(6) Turn the SEL/PUSH EXEC dial to adjust the effect.
(7) Press START/STOP to start recording. Press PHOTO when you set the POWER switch to MEMORY.



Superimposing a still picture in a "Memory Stick" on a moving picture – MEMORY MIX

Items to be adjusted

M. CHROM	The color (blue) scheme of the area in the still picture which is to be swapped with a moving picture
M. LUMI	The color (bright) scheme of the area in the still picture which is to be swapped with a moving picture
C. CHROM	The color (blue) scheme of the area in the moving picture which is to be swapped with a still picture
M. OVERLAP	No adjustment necessary

The fewer bars there are on the screen, the stronger the effect.

To change the still picture to be superimposed

Do either of the following:
– Press MEMORY+/– before step 6.
– Press the SEL/PUSH EXEC dial before step 6, and repeat the procedure from step 4. (Except for M.OVERLAP)

To change the mode setting

Press the SEL/PUSH EXEC dial before step 6, and repeat the procedure from step 4. (Except for M.OVERLAP)

To cancel MEMORY MIX

Press MEMORY MIX.

Notes

- You can not use MEMORY MIX function for moving pictures recorded on "Memory Stick"s.
- When the overlapping still image has a large amount of white, the thumbnail image of the picture may not be clear.

Image data modified with computers or shot with other equipment
You may not be able to play them back with your camcorder.

When you set the POWER switch to MEMORY
You cannot select M.OVERLAP.

The "Memory Stick" supplied with your camcorder has stored 20 images
– For M.CHROM : 18 images (such as a frame) 100-0001 ~ 100-0018
– For C.CHROM : 2 images (such as a background) 100-0019 ~ 100-0020

Sample images
Sample images stored in the "Memory Stick" supplied with your camcorder are protected (p. 143).

During recording
You cannot change the mode setting.

Copying still images from a tape – Photo save

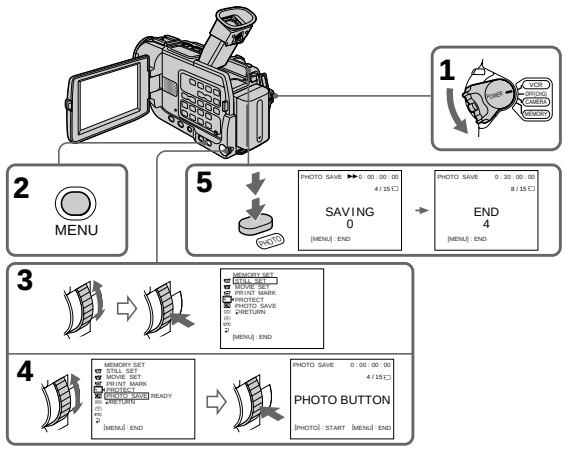
– DCR-TRV17 only

Using the search function, you can automatically take in only still images from tapes and record them on a "Memory Stick" in sequence.

Before operation

- Insert a recorded tape into your camcorder and rewind the tape.
- Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to VCR.
(2) Press MENU to display the menu.
(3) Turn the SEL/PUSH EXEC dial to select , then press the dial.
(4) Turn the SEL/PUSH EXEC dial to select PHOTO SAVE, then press the dial. "PHOTO BUTTON" appears on the screen.
(5) Press PHOTO deeper. The still image from the tape is recorded on a "Memory Stick." The number of still images copied is displayed. END is displayed when copying is completed.



Copying still images from a tape – Photo save

To stop or end copying

Press MENU.

When the memory of the "Memory Stick" is full

"MEMORY FULL" appears on the screen, and the copying stops. Insert another "Memory Stick" and repeat the procedure from step 2.

When the access lamp is lit or flashing
Do not shake or strike your camcorder. As well do not turn the power off, eject a "Memory Stick" or remove the battery pack. Otherwise, the image data breakdown may occur.

If the write-protect tab on the "Memory Stick" is set to LOCK
"NOT READY" appears when you select the item in the menu settings.

When you change "Memory Stick"s in the middle of copying
Your camcorder resumes copying from the last image recorded on the previous "Memory Stick."

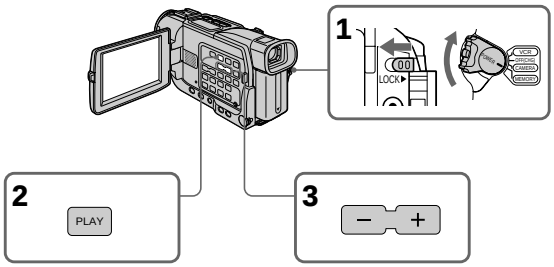
Viewing a still picture – Memory photo playback

– DCR-TRV17 only

You can play back still images recorded on a "Memory Stick." You can also play back six images at a time by selecting the index screen.

Before operation
Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY or VCR.
Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MEMORY PLAY. The last recorded image is displayed.
(3) Press MEMORY +/– to select the desired still image. To see the previous image, press MEMORY –. To see the next image, press MEMORY +.



To stop memory photo playback

Press MEMORY PLAY again.

Note
You may not be able to play back images properly in the following cases:
– when playing back on your camcorder image data modified with computer.
– when playing back image data on other equipment including other DCR-TRV17.

Notes on the file name

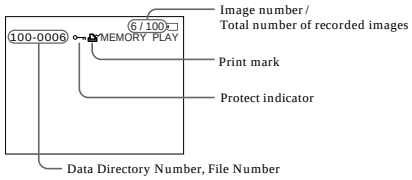
- The directory is not displayed if the structure of the directory does not conform to the DCF98 standard.
- "DIRECTORY ERROR" may appear on the screen if the structure of the directory does not conform to the DCF98 standard. While this message appears, you can play back images but cannot record them on the "Memory Stick".
- The file name flashes on the screen if the file is corrupted or the file is unreadable.

To play back recorded images on a TV screen
- Connect your camcorder to the TV with the A/V connecting cable supplied with your camcorder before operation.
- When operating memory photo playback on a TV or on the LCD screen, the image quality may appear to have deteriorated. This is not a malfunction. The image data is as good as ever.
- Turn the audio volume of the TV down before operation, or noise (howling) may be output from the TV speakers.

Recording data
When you press DATA CODE on the Remote Commander, you can see the recording data (date/time or various settings when recorded). Recording data are also recorded on "Memory Stick".

When no image is recorded on the "Memory Stick"
The message "NO FILE" appears.

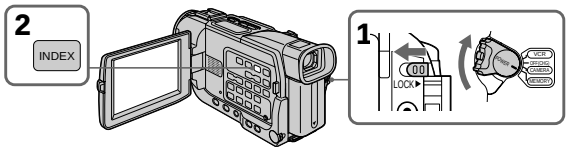
Screen indicators during still image playback



Playing back six recorded images at a time (index screen)

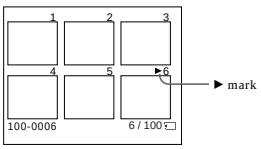
You can play back six recorded images at a time. This function is especially useful when searching for a particular image.

(1) Set the POWER switch to MEMORY or VCR. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MEMORY INDEX to display the index screen.



A red ▶ mark appears above the image that is displayed before changing to the index screen mode.

MEMORY – : to display the previous six images
MEMORY + : to display the following six images



To return to the normal playback screen (single screen)
Press MEMORY +/– to move the ▶ mark to the image you want to display on full screen, then press MEMORY PLAY.

Note
When displaying the index screen, the number appears above each image. This indicates the order in which images are recorded on the "Memory Stick." These numbers are different from the data file names.

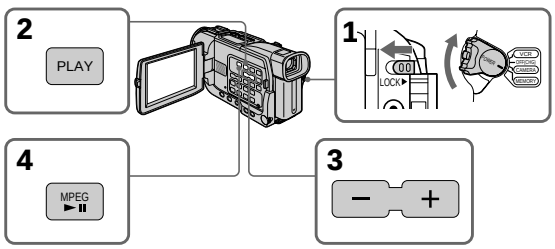
Image data modified with computers or shot with other equipment
These files may not be displayed on the index screen.

Viewing a moving picture – MPEG movie playback

– DCR-TRV17 only
You can play back moving pictures recorded on a "Memory Stick." You can also play back 6 images including still images in order at a time by selecting the index screen.

Before operation
Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY or VCR. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MEMORY PLAY. The last recorded image is displayed.
(3) Press MEMORY +/– to select the desired moving pictures. To see the previous picture, press MEMORY –. To see the next picture, press MEMORY +.
(4) Press MPEG ▶ II to start playback.



To stop MPEG movie playback
Press MPEG ▶ II.

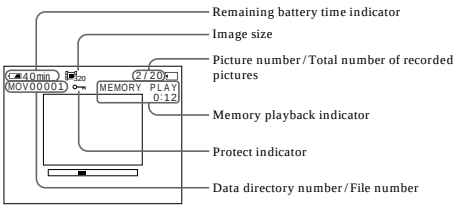
Note
You may not be able to play back images properly in the following cases:
– when playing back on your camcorder image data modified with computer
– when playing back image data on other equipment including other DCR-TRV17.

To play back recorded images on a TV screen
- Connect your camcorder to the TV with the A/V connecting cable supplied with your camcorder before operation.
- Turn the audio volume of the TV down before operation, or noise (howling) may be output from the TV speakers.

Recording data
When you press DATA CODE on the Remote Commander, you can see the recording data (date/time or various setting when recorded).

When no image is recorded on the "Memory Stick"
The message "NO FILE" appears.

Screen indicators during moving picture playback



Viewing images using computer

– DCR-TRV17 only

You can view data recorded on the "Memory Stick" using your computer.

On file format

Data recorded on the "Memory Stick" is stored in the following formats. Make sure that applications that support these file formats are installed on your computer.

- Still images: JPEG format
- Moving images / audio: MPEG format

ActiveMovie Player (DirectShow) must be installed (to play back moving pictures).
QuickTime 3.2 or newer must be installed (to play back moving pictures).

Application software

For details on the application software, refer to the operating instructions supplied with the CD-ROM.

Recommended USB connections environment

Recommended Windows environment

OS: Microsoft Windows 98, Windows 98SE, Windows Me or Windows 2000 Professional standard installation is required.
However, operation is not assured if the above environment is upgraded OS.
CPU: MMX Pentium 200 MHz or faster
The USB connector must be provided as standard.

Recommended Macintosh environment

Macintosh computer with the Mac OS 8.5.1 / 8.6 / 9.0 standard installation
However, note that the update to Mac OS 9.0 should be used for the following models.

- iMac with the Mac OS 8.6 standard installation and a slot loading type CD-ROM drive
- iBook or G4 with the Mac OS 8.6 standard installation

The USB connector must be provided as standard.

Notes

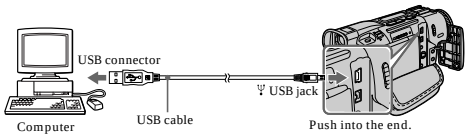
- Operations are not guaranteed for either the Windows or Macintosh environment if you connect 2 or more USB equipment to a single computer at the same time, or when using a hub.
- Depending on the type of USB equipment that is used simultaneously, some equipment may not operate.
- Operations are not guaranteed for all the recommended computer environments mentioned above.
- All other product names mentioned herein may be the trademarks or registered trademarks of their respective companies.
- Furthermore, "™" and "®" are not mentioned in each case in this manual.

Installing the USB driver

Before connecting your camcorder to your computer, install the USB driver to the computer. The USB driver is contained together with application software for viewing images on a CD-ROM which is supplied with your camcorder.

For Windows 98/98SE, Windows 2000, Windows Me users

(1) Turn on your computer and allow Windows to load.
(2) Insert the supplied CD-ROM in the CD-ROM drive of your computer.
(3) Launch the application program on CD-ROM. After a moment, the dialog box appears on your desktop. Set the cursor on "USB Driver Installation for Windows 98 / 98SE / 2000 / Me" and click.
(4) The Setup program starts. Complete the installation on CD-ROM.
(5) Connect the USB jack on your camcorder with the USB connector on your computer using the supplied USB cable.
(6) Insert a "Memory Stick" into your camcorder, connect the AC power adaptor and set the POWER switch to MEMORY.
USB MODE appears on the LCD screen of your camcorder. Your computer recognizes the camcorder, and the Windows Add Hardware Wizard starts.
(7) The Add Hardware Wizard starts twice because 2 different USB drivers are installed. Be sure to allow the installation to complete without interrupting it.



Note

You cannot install the USB driver if a "Memory Stick" is not in your camcorder.
Be sure to insert a "Memory Stick" into your camcorder before installing the USB driver.

For Macintosh users

(1) Turn on your computer and allow the Mac OS to load.
(2) Insert the supplied CD-ROM in the CD-ROM drive of your computer.
(3) Double-click the CD-ROM drive icon to open the window.
(4) Double-click the icon of the hard disk containing the OS to open the window.
(5) Move the following 2 files from the window opened in step 3 to the System Folder icon in the window opened in step 4 (drag and drop).

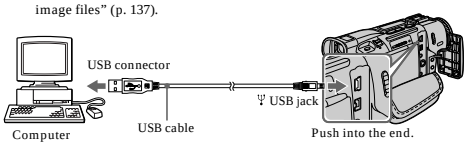
- Sony Camcorder USB Driver
- Sony Camcorder USB Shim

(6) When "Put these items into the Extensions folder?" appears, click OK.
(7) Restart your computer.

Viewing images

For Windows 98 users

(1) Turn on the power of your computer and allow Windows 98 to load.
(2) Connect one end of the USB cable to the USB jack on the camcorder and the other end to the USB connector on your computer.
(3) Insert a "Memory Stick" into your camcorder, and connect the AC power adaptor to your camcorder and then to a wall outlet.
(4) Set the POWER switch to MEMORY.
USB MODE appears on the screen of the camcorder.
(5) Open "My Computer" on Windows 98 and double click the newly recognized drive. (Example: "Removable Disk (D:)")
The folders inside the "Memory Stick" are displayed.
(6) Select and double-click the desired image file from the folder.
For the detailed folder and file name, see "Image file storage destinations and image files" (p. 137).



Desired file type	Double-click in this order
Still image	"Dcim" folder → "100msdcf" folder → Image file
Moving picture*	"Mssony" folder → "Moml0001" folder → Image file*

* Copying a file to the hard disk of your computer before viewing it is recommended. If you play back the file directly from the "Memory Stick", the image and sound may break off.

Unplug the USB cable/Eject the "Memory Stick"

To unplug the USB cable or eject the "Memory Stick", follow the procedure below.

For Windows 2000/Windows Me users

(1) Move the cursor to the "Unplug or Eject Hardware" icon on the Task Tray and click to cancel the applicable drive.
(2) A message to remove the device from the system appears, then unplug the USB cable or eject the "Memory Stick."

For Macintosh users

(1) Quit application programs opened.
Make sure that the access lamp of the hard disk is not lit.
(2) Drag and drop the "Memory Stick" icon to the Trash or select Eject under the Special menu.
(3) Eject the "Memory Stick."

Notes on using your computer

"Memory Stick"

- "Memory Stick" operations on your camcorder cannot be assured if the "Memory Stick" has been formatted on your computer.
- Do not optimize the "Memory Stick" on a Windows machine. This will shorten the "Memory Stick" life.
- Do not compress the data on the "Memory Stick." Compressed files cannot be played back on your camcorder.

Software

- Depending on your application software, the file size may increase when you open a still image file.
- When you load an image modified using a retouch software from your computer to the camcorder or when you directly modify the image on the camcorder, the image format will differ so a file error indicator may appear and you may be unable to open the file.

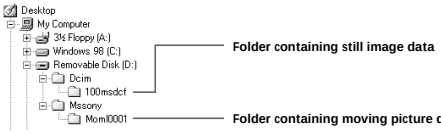
Communications with your computer

Communications between your camcorder and your computer may not recover after recovering from Suspend, Resume, or Sleep.

Image file storage destinations and image files

Image files recorded with your camcorder are grouped in folders by recording mode. The meanings of the file names are as follows. □□□□ stands for any number within the range from 0001 to 9999.

For Windows 98 users (The drive recognizing the camcorder is [D:])



Folder	File	Meaning
100msdcf	DSC0□□□□.JPG	Still image file
Moml0001	MOV0□□□□.MPG	Moving picture file

Copying the image recorded on “Memory Stick”s to tapes

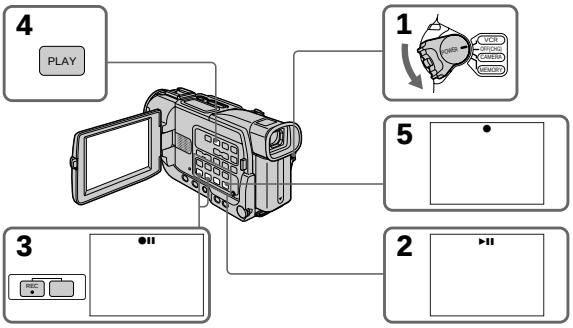
– DCR-TRV17 only

You can copy still images or titles recorded on “Memory Stick” and record them to a tape.

Before operation

• Insert a tape for recording into your camcorder.
• Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to VCR.
(2) Using the video control buttons, search a point where you want to record the desired still image. Set the tape to playback pause.
(3) Press ● REC and the button on its right simultaneously on your camcorder. The tape is set to the recording pause mode.
(4) Press MEMORY PLAY and select the still image you want to copy by MEMORY +/–.
(5) Press ❚❚ to start recording and press ❚❚ again to stop.
(6) If you have more to copy, repeat steps 4 and 5.



To stop copying in the middle

Press ■.

During copying

You cannot operate the following buttons:
– MEMORY PLAY
– MEMORY INDEX
– MEMORY DELETE
– MEMORY +/–
– MEMORY MIX

Copying the image recorded on “Memory Stick”s to tapes

Note on the index screen

You cannot record the index screen.

If you press EDITSEARCH during pause mode

Memory playback stops.

Image data modified with computers or shot with other equipment

You may not be able to copy them with your camcorder.

If you press DISPLAY during recording or in recording standby mode

You can see memory playback and the file name indicators in addition to the indicators pertinent to tapes, such as the time code indicator.

Enlarging still images recorded on “Memory Stick”s – Memory PB ZOOM

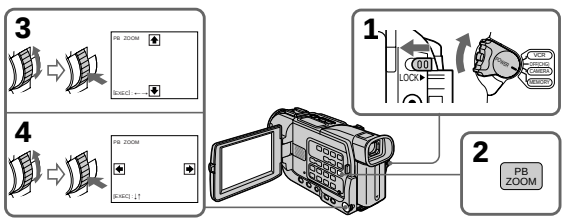
– DCR-TRV17 only

You can enlarge still images recorded on a “Memory Stick.” You can select and view the desired part from the enlarged still image. Also, you can copy the desired part of the enlarged still image to tapes or video tapes.

Before operation

Insert a “Memory Stick” into your camcorder.

(1) Set the POWER switch to MEMORY or VCR. Make sure that the LOCK switch is set to the left (unlock) position.
(2) In the memory playback mode, press PB ZOOM on your camcorder. The still image is enlarged, and ↑ ↓ ← → appear on the screen.
(3) Turn the SEL / PUSH EXEC dial to move the enlarged image, then press the dial.
↑ : The image moves downwards.
↓ : The image moves upwards.
(4) Turn the SEL / PUSH EXEC dial to move the enlarged image, then press the dial.
→ : The image moves leftward. (Turn the dial upwards.)
← : The image moves rightward. (Turn the dial downwards.)



To cancel the Memory PB ZOOM function

Press PB ZOOM.

Note

You cannot copy the images enlarged by the PB ZOOM mode on “Memory Stick”s.

In the PB ZOOM mode

The digital effect function does not work.

Enlarging still images recorded on “Memory Stick”s – Memory PB ZOOM

The PB ZOOM function is cancelled when the following buttons are pressed:

– MENU
– MEMORY PLAY
– MEMORY INDEX
– MEMORY +/–

Pictures in the PB ZOOM mode

Pictures in the PB ZOOM mode are not output through the i.LINK DV IN / OUT jack when the POWER switch is set to MEMORY.

Moving pictures recorded on “Memory Stick”s

The PB ZOOM function does not work on moving pictures recorded on “Memory Stick”s.

Playing back images in a continuous loop – SLIDE SHOW

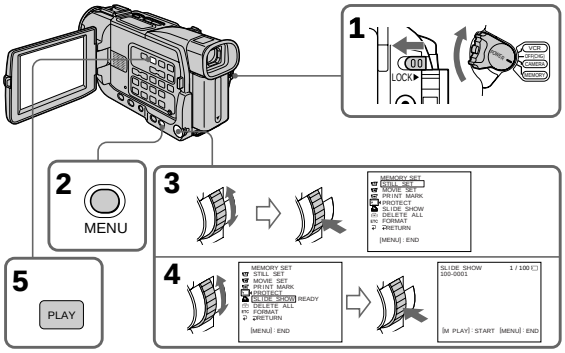
– DCR-TRV17 only

You can automatically play back images in sequence. This function is useful especially when checking recorded images or during a presentation.

Before operation

Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MENU to display the menu.
(3) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select SLIDE SHOW, then press the dial.
(5) Press MEMORY PLAY. Your camcorder plays back the images recorded on a "Memory Stick" in sequence.



To stop the slide show

Press MENU.

To pause during a slide show

Press MEMORY PLAY.

To start the slide show from a particular image

Select the desired image using MEMORY + / – buttons before step 2.

To view the recorded images on TV

Connect your camcorder to a TV with the A / V connecting cable supplied with your camcorder before operation.

If you change the "Memory Stick" during operation

The slide show does not operate. If you change the "Memory Stick," be sure to follow the steps again from the beginning.

Preventing accidental erasure – Image protection

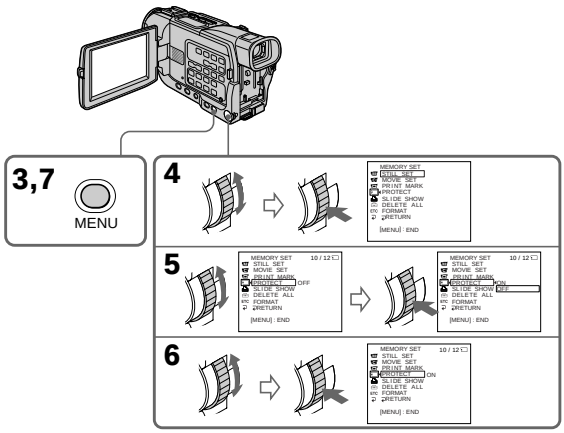
– DCR-TRV17 only

To prevent accidental erasure of important images, you can protect selected images.

Before operation

Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY or VCR. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Play back the image you want to protect.
(3) Press MENU to display the menu.
(4) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select PROTECT, then press the dial.
(6) Turn the SEL / PUSH EXEC dial to select ON, then press the dial.
(7) Press MENU to make the menu display disappear. The "🔑" mark is displayed beside the data file name of the protected image.



To cancel image protection

Select OFF in step 6, then press the SEL / PUSH EXEC dial.

Note

Formatting erases all information on the "Memory Stick," including the protected image data. Check the contents of the "Memory Stick" before formatting.

If the write-protect tab on the "Memory Stick" is set to LOCK

You cannot carry out image protection.

Deleting images

– DCR-TRV17 only

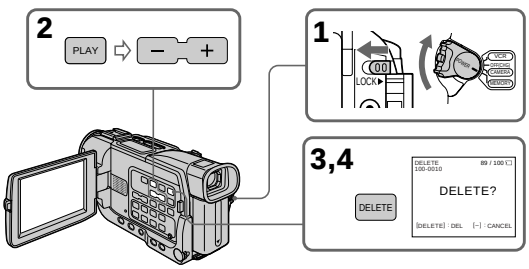
You can delete images stored in a "Memory Stick."
You can delete all images or selected images.

Deleting selected images

Before operation

Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY or VCR. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Play back the image you want to delete.
(3) Press MEMORY DELETE. "DELETE?" appears on the screen.
(4) Press MEMORY DELETE again. The selected image is deleted.



To cancel deleting an image

Press MEMORY – in step 4.

To delete an image displayed on the index screen

Press MEMORY + / – to move the ▶ indicator to the desired image and follow steps 3 and 4.

Notes

- To delete a protected image, first cancel image protection.
- Once you delete an image, you cannot restore it. Check the images to delete carefully before deleting them.

If the write-protect tab on the "Memory Stick" is set to LOCK

You cannot delete images.

Deleting images

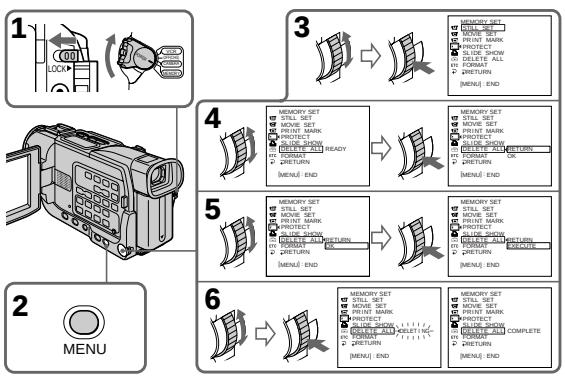
Deleting all the images

You can delete all the unprotected images in a "Memory Stick."

Before operation

Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Press MENU to display the menu.
(3) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(4) Turn the SEL / PUSH EXEC dial to select DELETE ALL, then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select OK, then press the dial. "OK" changes to "EXECUTE."
(6) Turn the SEL / PUSH EXEC dial to select EXECUTE, then press the dial. "DELETING" appears on the screen. When all the unprotected images are deleted, "COMPLETE" is displayed.



To cancel deleting all the images in the "Memory Stick"

Select RETURN in step 5, then press the SEL / PUSH EXEC dial.

While "DELETING" appears

Do not turn the POWER switch or press any buttons.

Writing a print mark – PRINT MARK

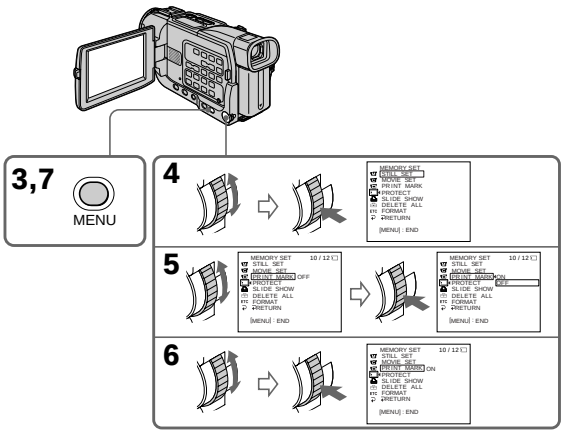
– DCR-TRV17 only

You can specify the recorded still image to print out. This function is useful for printing out still images later.
Your camcorder conforms with the DPOF (Digital Print Order Format) standard for specifying the still images to print out.

Before operation

Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY or VCR. Make sure that the LOCK switch is set to the left (unlock) position.
(2) Play back the image you want to write a print mark.
(3) Press MENU to display the menu.
(4) Turn the SEL / PUSH EXEC dial to select , then press the dial.
(5) Turn the SEL / PUSH EXEC dial to select PRINT MARK, then press the dial.
(6) Turn the SEL / PUSH EXEC dial to select ON, then press the dial.
(7) Press MENU to make the menu display disappear. The " " mark is displayed beside the data file name of the image with a print mark.



To cancel writing print marks

Select OFF in step 6, then press the SEL / PUSH EXEC dial.

If the write-protect tab on the "Memory Stick" is set to LOCK

You cannot write print marks on still images.

Moving pictures

You cannot write print marks on moving pictures.

While the file name is flashing

You cannot write print marks on images.

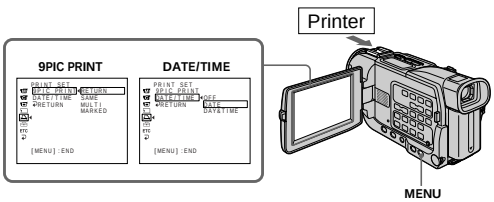
Using the printer (optional)

– DCR-TRV17 only

You can use the printer (optional) on your camcorder to print images on the print paper.
For details, refer to the operating instructions of the printer.
There are various ways of printing still images. The following, however, describes how to print by selecting in the menu on your camcorder.

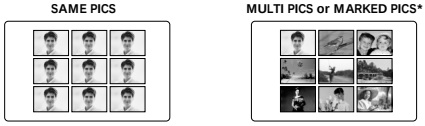
Before operation

• Insert a recorded "Memory Stick" into your camcorder.
• Connect the printer to your camcorder as illustrated.



You can print 9 still images on the 9 split print paper. Select the desired mode in the menu settings.

SAME PICS **MULTI PICS or MARKED PICS***



* 9 still images with print marks are printed together.

You can make prints with the recording date and / or recording time. Select the desired mode in the menu settings.

DATE **DAY & TIME**

Images recorded in multi screen mode

You cannot print images recorded in multi screen mode on sticker type print paper.

You cannot print following images:

– Moving pictures recorded on "Memory Stick"
– Images processed by the PB ZOOM function

Types of trouble and their solutions

If you run into any problem using your camcorder, use the following table to troubleshoot the problem. If the problem persists, disconnect the power source and contact your Sony dealer or local authorized Sony service facility. If "C:□□:□□" appears on the screen or the self-diagnosis display function has worked. See page 155.

In the recording mode

Symptom	Cause and/or Corrective Actions
START / STOP does not operate.	• The POWER switch is not set to CAMERA. → Set it to CAMERA. (p. 21) • The tape has run out. → Rewind the tape or insert a new one. (p. 20, 33) • The write-protect tab is set to expose the red mark. → Use a new tape or slide the tab. (p. 20) • The tape is stuck to the drum (moisture condensation). → Remove the cassette and leave your camcorder for at least one hour to acclimatize. (p. 165)
The power goes off.	• While being operated in CAMERA mode, your camcorder has been in the standby mode for more than five minutes. → Set the POWER switch to OFF (CHG) and then to CAMERA. (p. 21) • The battery pack is dead or nearly dead. → Install a charged battery pack.
The image on the viewfinder is not clear.	• The viewfinder lens is not adjusted. → Adjust the viewfinder lens. (p. 24)
The SteadyShot function does not work.	• STEADYSHOT is set to OFF in the menu settings. → Set it to ON. (p. 97)
The autofocusing function does not work.	• The setting is the manual focus. → Press FOCUS to set to the auto focus mode. (p. 53) • Shooting conditions are not suitable for autofocus. → Adjust to focus manually. (p. 53)
The picture does not appear in the viewfinder.	• The LCD panel is open. → Close the LCD panel. (p. 22)
A vertical band appears when you shoot a subject such as lights or a candle flame against a dark background.	• The contrast between the subject and background is too high. Your camcorder is not a malfunction.
A vertical band appears when you shoot a very bright subject.	• Your camcorder is not a malfunction.
Some tiny white spots appear on the screen.	• Slow shutter, low lux or Super NightShot mode is activated. This is not a malfunction.
An unknown picture is displayed on the screen.	• If 10 minutes elapse after you set the POWER switch to CAMERA or DEMO MODE is set to ON in the menu settings without a cassette inserted, your camcorder automatically starts the demonstration. → Insert a cassette and the demonstration stops. You can also cancel DEMO MODE. (p. 101)

(continued on the following page)

Symptom	Cause and/or Corrective Actions
The picture is recorded in incorrect or unnatural colors.	• NIGHTSHOT is set to ON. → Set it to OFF. (p. 27)
The picture appears too bright, and the subject does not appear on the screen.	• NIGHTSHOT is set to ON in a bright place. → Set it to OFF . (p. 27) • BACK LIGHT is activated. → Deactivate it.
The click of the shutter does not sound.	• BEEP is set to OFF in the menu settings. → Set it to MELODY or NORMAL. (p. 102)
Black bands appear when you record TV or computer screen.	→ Set the STEADYSHOT in the menu settings to OFF. (p. 97)

In the playback mode

Symptom	Cause and/or Corrective Actions
The tape does not move when a video control button is pressed.	• The POWER switch is not set to VCR. → Set it to VCR. (p. 31)
The playback button does not work.	• The tape has run out. → Rewind the tape. (p. 33)
There are horizontal lines on the picture or the playback picture is not clear or does not appear.	• The video head may be dirty. → Clean the heads using the cleaning cassette (optional). (p. 166)
No sound or only a low sound is heard when playing back a tape.	• The volume is turned to minimum. → Turn up the volume. (p. 31) • AUDIO MIX is set to ST2 in the menu settings. → Adjust AUDIO MIX. (p. 98)
Displaying the recorded date, date search function does not work.	• The tape has no cassette memory. → Use a tape with cassette memory. (p. 62) • CM SEARCH is set to OFF in the menu settings. → Set it to ON. (p. 100) • The tape has a blank portion in the recorded portion. (p. 62)
The title search function does not work.	• The tape has no cassette memory. → Use a tape with cassette memory. (p. 62) • CM SEARCH is set to OFF in the menu settings. → Set it to ON. (p. 100) • There is no title in the tape. → Superimpose the titles. (p. 89) • The tape has a blank portion in the recorded portion. (p. 90)
The new sound added to the recorded tape is not heard.	• AUDIO MIX is set to ST1 side in the menu settings. → Adjust AUDIO MIX. (p. 98)
The title is not displayed.	• TITLE DSPL is set to OFF in the menu settings. → Set it to ON. (p. 100)

In the recording and playback modes

Symptom	Cause and/or Corrective Actions
The power does not turn on.	• The battery pack is not installed, or is dead or nearly dead. → Install a charged battery pack. (p. 12, 13) • The AC power adaptor is not connected to a wall outlet. → Connect the AC power adaptor to a wall outlet. (p. 17)
The end search function does not work.	• The tape was ejected after recording when using a tape without cassette memory. (p. 30) • You have not recorded on the new cassette yet. (p. 30)
The end search function does not work correctly.	• The tape has a blank portion in the beginning or middle.
The battery pack is quickly discharged.	• The operating temperature is too low. • The battery pack is not fully charged. → Charge the battery pack again. (p. 13) • The battery pack is completely dead, and cannot be recharged. → Replace with a new battery pack. (p. 12)
The battery remaining indicator does not indicate the correct time.	• You have used the battery pack in an extremely hot or cold environment for a long time. • The battery pack is completely dead, and cannot be recharged. → Replace with a new battery pack. (p. 12) • The battery is not fully charged. → Charge the battery pack fully again. (p. 13) • A deviation has occured in the remaining battery time. → Charge the battery fully. (p. 13)
The power goes off although the battery remaining indicator indicates that the battery pack has enough power to operate.	• A deviation has occured in the remaining battery time. → Charge the battery pack fully again so that the indication on the battery remaining indicator is correct. (p. 13)
The cassette cannot be removed from the holder.	• The power source is disconnected. → Connect it firmly. (p. 12, 17) • The battery is dead. → Use a charged battery pack. (p. 12, 13)
The ⬇ and ⏏ indicators flash and no functions except for cassette ejection work.	• Moisture condensation has occurred. → Remove the cassette and leave your camcorder for at least one hour to acclimatize. (p. 165)
CII indicator does not appear when using a tape with cassette memory.	• The gold-plated connector of the tape is dirty or dusty. → Clean the gold-plated connector. (p. 158)
Remaining tape indicator is not displayed.	• The REMAIN is set to AUTO in the menu settings. → Set it to ON to always display the remaining tape indicator. (p. 101)

(continued on the following page)

When operating using the “Memory Stick”

– DCR-TRV17 only

Symptom	Cause and/or Corrective Actions
The “Memory Stick” does not function.	• The POWER switch is not set to MEMORY. → Set it to MEMORY. (p. 112) • The “Memory Stick” is not inserted. → Insert a “Memory Stick”. (p. 105)
Recording does not function.	• The “Memory Stick” has already been recorded to its full capacity. → Delete unnecessary images and record again. (p. 144) • The “Memory Stick” formatted incorrectly is inserted. → Format the “Memory Stick” or use another “Memory Stick. “ (p. 100) • The write-protect tab on the “Memory Stick” is set to LOCK. → Release the lock. (p. 103)
The image cannot be deleted.	• The image is protected. → Cancel image protection. (p. 143) • The write-protect tab on the “Memory Stick” is set to LOCK. → Release the lock. (p. 103)
You cannot format the “Memory Stick”.	• The write-protect tab on the “Memory Stick” is set to LOCK. → Release the lock. (p. 103)
Deleting all the images cannot be carried out.	• The write-protect tab on the “Memory Stick” is set to LOCK. → Release the lock. (p. 103)
You cannot protect the image.	• The write-protect tab on the “Memory Stick” is set to LOCK. → Release the lock. (p. 103) • The image to protect is not be played back. → Press MEMORY PLAY to play back the image. (p. 129)
You cannot write a print mark on the still image.	• The write-protect tab on the “Memory Stick” is set to LOCK. → Release the lock. (p. 103) • The image to write a print mark is not be played back. → Press MEMORY PLAY to play back the image. (p. 129)
The photo save function does not work.	• The write-protect tab on the “Memory Stick” is set to LOCK. → Release the lock. (p. 103) • The battery pack is dead. → Install a charged battery pack or use the AC power adaptor
You cannot play back images in actual size.	• You may not be able to play back images in actual size when you try to play back images recorded by other equipment. → This is not a malfunction.

Others

Symptom	Cause and/or Corrective Actions
The title is not recorded.	• The tape has no cassette memory. → Use a tape with cassette memory. (p. 89, 158) • The cassette memory is full. → Erase unnecessary title. (p. 91) • The tape is set to prevent accidental erasure. → Slide the write-protect tab so that red portion is not visible. (p. 20) • Nothing is recorded in that position on the tape. → Superimpose the title to the recorded position. (p. 89)
The cassette label is not recorded.	• The tape has no cassette memory. → Use a tape with cassette memory. (p. 94, 158) • The cassette memory is full. → Erase some titles. (p. 91) • The tape is set to prevent accidental erasure. → Slide the write-protect tab so that red portion is not visible. (p. 20)
Digital program editing does not function.	• The input selector on the VCR is not set correctly. → Check the connection and set the input selector on the VCR again. (p. 66, 67) • The camcorder is connected to DV equipment of other than Sony. → Set it to IR. (p. 69) • Setting program on a blank portion of the tape is attempted. → Set the program again on a recorded portion. (p. 76) • The camcorder and the VCR are not synchronized. → Adjust the synchronicity. (p. 73)
The Remote Commander supplied with your camcorder does not work.	• COMMANDER is set to OFF in the menu settings. → Set it to ON. (p. 102) • Something is blocking the infrared rays. → Remove the obstacle. • The batteries are inserted in the battery holder with the + – polarities incorrectly matching the + – marks. → Insert the batteries with the correct polarity. (p. 178) • The batteries are dead. → Insert new ones. (p. 178)
The picture from a TV or VCR does not appear even when your camcorder is connected to output on the TV or VCR.	• DISPLAY is set to V-OUT/LCD in the menu settings. → Set it to LCD. (p. 102)

(continued on the following page)

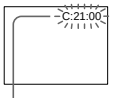
Types of trouble and their solutions

Symptom	Cause and/or Corrective Actions
The melody or beep sounds for five seconds.	• Moisture condensation has occurred. → Remove the cassette and leave your camcorder for at least one hour to acclimatize. (p. 165) • Some troubles have occurred in your camcorder. → Remove the cassette and insert it again, then operate your camcorder.
No function works though the power is on.	• Disconnect the power cord of the AC power adaptor or remove the battery, then reconnect it in about one minute. Turn the power on. If the functions still do not work, open the LCD panel and press the RESET button beside the ● REC button using a sharp-pointed object. (If you press the RESET button, all the settings including the date and time return to the default.) (p. 176)
While charging the battery pack, no indicator appears or the indicator flashes in the display window.	• The battery pack is not properly installed. → Install it properly. • Something is wrong with the battery pack. → Contact your Sony dealer or local authorized Sony service facility.
You cannot charge the battery pack.	• The POWER switch is not set to OFF (CHG). → Set it to OFF (CHG).

Self-diagnosis display

Your camcorder has a self-diagnosis display function.
This function displays the current condition of your camcorder as a 5-digit code (a combination of a letter and figures) in the viewfinder, on the LCD screen or in the display window. If a 5-digit code is displayed, check the following code chart. The last two digits (indicated by □□) will differ depending on the state of your camcorder.

LCD screen, Viewfinder or Display window



Self-diagnosis display

- C:□□:□□
  You can service your camcorder yourself.
- E:□□:□□
  Contact your Sony dealer or local authorized Sony service facility.

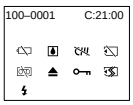
Five-digit display	Cause and/or Corrective Actions
C:04:□□	• You are using a battery pack that is not an "InfoLITHIUM" battery pack. → Use an "InfoLITHIUM" battery pack. (p. 160)
C:21:□□	• Moisture condensation has occurred. → Remove the cassette and leave your camcorder for at least one hour to acclimatize. (p. 165)
C:22:□□	• The video heads are dirty. → Clean the heads using the cleaning cassette (optional). (p. 166)
C:31:□□ C:32:□□	• A malfunction other than the above that you can service has occurred. → Remove the cassette and insert it again, then operate your camcorder. → Disconnect the power cord of the AC power adaptor or remove the battery pack. After reconnecting the power source, operate your camcorder.
E:61:□□ E:62:□□	• A malfunction that you cannot service has occurred. → Contact your Sony dealer or local authorized Sony service facility and inform them of the 5-digit code. (example: E:61:10)

If you are unable to rectify the problem even if you try corrective actions a few times, contact your Sony dealer or local authorized Sony service facility.

Warning indicators and messages

If indicators and messages appear on the screen, check the following:
See the page in parentheses "( )" for more information.

Warning indicators



100-0001 **Warning indicator as to file**
Slow flashing:
- The file is corrupted.
- The file is unreadable.
- You are trying to carry out MEMORY MIX function on moving picture.

C:21:00 **Self-diagnosis display** (p. 155)

The battery is dead or nearly dead
Slow flashing:
- The battery is nearly dead.
  Depending on the operating conditions, environment and battery condition, the indicator may flash, even if there are approximately 5 to 10 minutes remaining.

Fast flashing:
- The battery is dead.

Moisture condensation has occurred*
Fast flashing:
- Eject the cassette, turn off your camcorder, and leave it for about 1 hour with the cassette compartment open (p. 165).

Warning indicator as to cassette memory*
Slow flashing:
- No tape with cassette memory is inserted (p. 158).

Warning indicator as to "Memory Stick"**
Slow flashing:
- No "Memory Stick" is inserted.

Fast flashing:
- The "Memory Stick" is not readable with your camcorder (p. 103).
- The image cannot be recorded on "Memory Stick" (p. 122).

Warning indicator as to "Memory Stick" formatting**
Fast flashing:
- "Memory Stick" is not formatted correctly (p. 100).
- The "Memory Stick" data is corrupted.*

Warning indicator as to tape
Slow flashing:
- The tape is near the end.
- No tape is inserted.*
- The write-protect tab on the cassette is out (red) (p. 20).*

Fast flashing:
- The tape has run out.*

You need to eject the cassette*
Slow flashing:
- The write-protect tab on the cassette is out (red) (p. 20).

Fast flashing:
- Moisture condensation has occurred (p. 165).
- The tape has run out.
- The self-diagnosis display function is activated (p. 155).

The still image is protected*
Slow flashing:
- The still image is protected (p. 143).

Warning indicator as to the external flash (optional)
Slow flashing:
- During charging.

Fast flashing:
- There is something wrong with the flash (optional) while charging.

* You hear the melody or beep sound.

** DCR-TRV17 only

Warning indicators and messages

Warning messages

• CLOCK SET	Set the date and time (p. 18).
• FOR "InfoLITHIUM" BATTERY ONLY	Use an "InfoLITHIUM" battery pack (p. 160).
• CLEANING CASSETTE*3)	The video heads are dirty (p. 166).
• FULL	The tape cassette memory is full.*2)
• 16BIT	AUDIO MODE is set to 16BIT (p. 101).*2) You cannot dub new sound.
• REC MODE	REC MODE is set to LP (p. 101).*2) You cannot dub new sound.
• TAPE	There is no recorded portion on the tape.*2) You cannot dub new sound.
• "i.LINK" CABLE	i.LINK cable is connected (p. 88).*2) You cannot dub new sound.
• FULL*1)	The "Memory Stick" is full (p. 115).*2)
• *1)	The write-protect tab on the "Memory Stick" is set to LOCK (p. 103).*2)
• NO FILE*1)	No still image is recorded on the "Memory Stick" (p. 130).*2)
• NO MEMORY STICK*1)	No "Memory Stick" is inserted.*2)
• AUDIO ERROR*1)	You are trying to record an image with sound that cannot be recorded by your camcorder on the "Memory Stick".*2)
• NO STILL IMAGE FILE	No still image is recorded on the "Memory Stick"though you are trying to print in the 9 PIC PRINT mode.
• MEMORY STICK ERROR*1)	The "Memory Stick" data is corrupted (p. 105).*2)
• FORMAT ERROR*1)	The "Memory Stick" is not recognized. Check the format (p. 100).*2)
• DIRECTORY ERROR*1)	There are more than two same directories (p. 129).*2)
• COPY INHIBIT	The tape contains copyright control signals for copyright protection of software (p. 158).*2)
• TAPE END	The tape has reached the end of the tape.*2)
• NO TAPE	Insert a cassette tape.*2)
• DELETING	You have pressed PHOTO during deleting all images on "Memory Stick."
• FORMATTING	You have pressed PHOTO during formatting a "Memory Stick."

*1) DCR-TRV17 only
*2) You hear the melody or beep sound.
*3) The ⊗ indicator and " CLEANING CASSETTE" message appear one after another on the screen.

Usable cassettes

Selecting cassette types

You can use the Mini DV mini DV cassette only*. You cannot use any other 8 mm, Hi8 Hi8, Digital8, VHS, VHSC VHSC, S-VHS, S-VHSC S-VHSC, Betamax, ED Beta ED Betamax or DV DV cassette.

* There are two types of mini DV cassettes: with cassette memory and without cassette memory. Tapes with cassette memory have (Cassette Memory) mark.
We recommend you to use the tape with cassette memory.

The IC memory is mounted on this type of cassette. Your camcorder can read and write data such as dates of recording or titles, etc. to this memory.
The functions using the cassette memory require successive signals recorded on the tape. If the tape has a blank portion in the beginning or between the recorded portions, a title may not be displayed properly or the search functions may not work properly. Not to make any blank portion on the tape, operate the followings.
Press END SEARCH to go to the end of the recorded portion before you begin the next recording if you operate the followings:
– you have ejected the cassette while recording.
– you have played back the tape in the VCR.
– you have used the edit search function.
If there is a blank portion or discontinuous signal on your tape, re-record from the beginning to the end of the tape concerning above.
The same result may occur when you record using a digital video camera recorder without a cassette memory function on a tape recorded by one with the cassette memory function.

mark on the cassette

The memory capacity of tapes marked with is 4KB. Your camcorder can accommodate tapes having a memory capacity of up to 16KB. 16KB tape is marked with .

Mini DV This is the Mini DV mark.

Cassette Memory This is the Cassette Memory mark.

These are trademarks.

Copyright signal

When you play back

Using any other video camera recorder, you cannot record on tape that has recorded a copyright control signals for copyright protection of software which is played back on your camcorder.

When you record

You cannot record software on your camcorder that contains copyright control signals for copyright protection of software.
"COPY INHIBIT" appears on the screen, in the viewfinder or on the TV screen if you try to record such software.
Your camcorder does not record copyright control signals on the tape when it records.

Audio mode

12-bit mode: The original sound can be recorded in stereo 1, and the new sound in stereo 2 in 32 kHz. The balance between stereo 1 and stereo 2 can be adjusted by selecting AUDIO MIX in the menu settings during playback. Both sounds can be played back.
16-bit mode: A new sound cannot be recorded but the original sound can be recorded in high quality. Moreover, it can also play back sound recorded in 32 kHz, 44.1 kHz or 48 kHz. When playing back a tape recorded in the 16-bit mode, 16BIT indicator appears on the LCD screen or in the viewfinder.

When you play back a dual sound track tape

When you play back a dual sound track tape recorded in a stereo system, set "HiFi SOUND" to the desired mode in the menu settings (p. 98).

Sound from speaker

HiFi SOUND mode	Playing back a stereo tape	Playing back a dual sound track tape
STEREO	Stereo	Main sound and sub sound
1	Left sound	Main sound
2	Right sound	Sub sound

You cannot record dual sound programs on your camcorder.

Notes on the cassette

When affixing a label on the cassette

Be sure to affix a label only on the locations as illustrated below **[a]** so as not to cause a malfunction of your camcorder.

After using the cassette

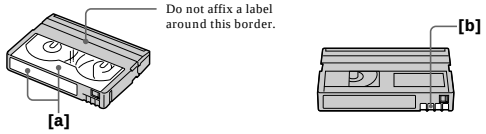
Rewind the tape to the beginning, put the cassette in its case, and store it in an upright position.

When the cassette memory function does not work

Reinsert a cassette. The gold-plated connector of cassettes may be dirty or dusty.

Cleaning the gold-plated connector

If the gold-plated connector of cassettes is dirty or dusty, you may not operate the function using cassette memory. Clean up the gold-plated connector with cotton-wool swab, about every 10 times ejection of a cassette. **[b]**



About the "InfoLITHIUM" battery pack

What is the "InfoLITHIUM" battery pack?

The "InfoLITHIUM" battery pack is a lithium-ion battery pack that has functions for communicating information related to operating conditions between the battery pack and your camcorder or an AC power adaptor.
The "InfoLITHIUM" battery pack calculates the power consumption according to the operating conditions of your camcorder, and displays the remaining battery time in minutes.

Charging the battery pack

- Be sure to charge the battery pack before you start using your camcorder.
- We recommend charging the battery pack in an ambient temperature of between 10 °C to 30 °C (50 °F to 86 °F) until FULL appears in the display window, indicating that the battery pack is fully charged. If you charge the battery pack outside of this temperature range, you may not be able to efficiently charge the battery pack.
- After charging is completed, either disconnect the AC power adaptor from the DC IN jack on your camcorder or remove the battery pack.

Effective use of the battery pack

- Battery performance decreases in low-temperature surroundings. So, the time that the battery pack can be used becomes shorter. We recommend the following to use the battery pack longer:
  – Put the battery pack in a pocket close to your body to warm it up, and insert it in your camcorder immediately before you start taking shots.
  – Use the large capacity battery pack (NP-FM50/FM70/FM90/FM91, optional).
- Frequently using the LCD panel or frequently operating playback, fast forward or rewind wears out the battery pack faster. We recommend using the large capacity battery pack (NP-FM50/FM70/FM90/FM91, optional).
- Be certain to turn the POWER switch to OFF (CHG) when not taking shots or playing back on your camcorder.
- Have spare battery packs handy for two or three times the expected recording time, and make a trial recording before the actual recording.
- Do not expose the battery pack to water. The battery pack is not water-resistant.

Remaining battery time indicator

- If the power may go off although the remaining battery time indicator indicates that the battery pack has enough power to operate, charge the battery pack fully again so that the indication on the remaining battery time indicator is correct. Note, however, that the correct battery indication sometimes will not be restored if it is used in high temperatures for a long time or left in a fully charged state, or the battery pack is frequently used. Regard the remaining battery time indication as the approximate shooting time.
- The mark indicating there is little remaining battery time sometimes flashes depending on the operating conditions or ambient temperature and environment even if the remaining battery time is about five to ten minutes.

How to store the battery pack

- Even if the battery pack is not used for a long time, store it in a dry, cool place after fully charging it once per year and then using the battery pack up on your camcorder. This is to maintain the battery pack's functions.
- To use the battery pack up on your camcorder, leave your camcorder in the shooting mode until the power goes off without a cassette inserted.

Battery life

- The battery life is limited. Battery capacity drops little by little as you use it more and more, and as time passes. When the available battery time is shortened considerably, a probable cause is that the battery pack has reached the end of its life. Please buy a new battery pack.
- The battery life varies according to how it is stored and operating conditions and environment for each battery pack.

About i.LINK

The DV jack on this unit is an i.LINK-compliant DV input / output jack. This section describes the i.LINK standard and its features.

What is i.LINK?

i.LINK is a digital serial interface for handling digital video, digital audio and other data in two directions between equipment having the i.LINK jack, and for controlling other equipment.
i.LINK-compatible equipment can be connected by a single i.LINK cable. Possible applications are operations and data transactions with various digital AV equipment.
When two or more i.LINK-compatible equipment are connected to this unit in a daisy chain, operations and data transactions are possible with not only the equipment that this unit is connected to but also with other devices via the directly connected equipment.
Note, however, that the method of operation sometimes varies according to the characteristics and specifications of the equipment to be connected, and that operations and data transactions are sometimes not possible on some connected equipment.

Note

Normally, only one piece of equipment can be connected to this unit by the i.LINK cable (DV connecting cable). When connecting this unit to i.LINK-compatible equipment having two or more i.LINK jacks (DV jacks), refer to the instruction manual of the equipment to be connected.

About the Name “i.LINK”

i.LINK is a more familiar term for IEEE 1394 data transport bus proposed by SONY, and is a trademark approved by many corporations.
IEEE 1394 is an international standard standardized by the Institute of Electrical and Electronic Engineers.

i.LINK Baud rate

i.LINK's maximum baud rate varies according to the equipment. Three maximum baud rates are defined:
S100 (approx. 100Mbps*)
S200 (approx. 200Mbps)
S400 (approx. 400Mbps)

The baud rate is listed under “Specifications” in the instruction manual of each equipment. It is also indicated near the i.LINK jack on some equipment.
The maximum baud rate of equipment on which it is not indicated such as this unit is “S100”.
When units are connected to equipment having a different maximum baud rate, the baud rate sometimes differs from the indicated baud rate.

***What is Mbps?**

Mbps stands for megabits per second, or the amount of data that can be sent or received in one second. For example, a baud rate of 100Mbps means that 100 megabits of data can be sent in one second.

i.LINK functions on this unit

For details on how to dub when this unit is connected to other video equipment having DV jacks, see page 67, 81.
This unit can also be connected to other i.LINK (DV) compatible equipment made by SONY (e.g. VAIO series personal computer) other than video equipment.
Before connecting this unit to a personal computer, make sure that application software supported by this unit is already installed on the personal computer.
For details on precautions when connecting this unit, also refer to the instruction manuals for the equipment to be connected.

Required i.LINK Cable

Use the Sony i.LINK 4-pin-to-4-pin cable (during DV dubbing).

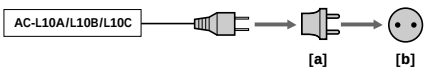
i.LINK and i are trademarks.

Using your camcorder abroad

Using your camcorder abroad

You can use your camcorder in any country or area with the AC power adaptor supplied with your camcorder within 100 V to 240 V AC, 50 / 60 Hz.

When charging the battery pack, use a commercially available AC plug adaptor **[a]**, if necessary, depending on the design of the wall outlet **[b]**.



Your camcorder is an NTSC system based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV with the AUDIO / VIDEO input jack.
The following shows TV color systems used overseas.

NTSC system

Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system

Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system

Brazil

PAL-N system

Argentina, Paraguay, Uruguay

SECAM system

Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Ukraine, etc.

Simple setting of clock by time difference

You can easily set the clock to the local time by setting a time difference. Select WORLD TIME in the menu settings. See page 102 for more information.

Maintenance information and precautions

Moisture condensation

If your camcorder is brought directly from a cold place to a warm place, moisture may condense inside your camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or your camcorder may not operate correctly. If there is moisture inside your camcorder, the beep sounds and the indicator flashes. When the ⏏ indicator flashes at the same time, the cassette is inserted in your camcorder. If moisture condenses on the lens, the indicator will not appear.

If moisture condensation occurred

None of the functions except cassette ejection will work. Eject the cassette, turn off your camcorder, and leave it for about one hour with the cassette compartment open. Your camcorder can be used again if the indicator does not appear when the power is turned on again.

Note on moisture condensation

Moisture may condense when you bring your camcorder from a cold place into a warm place (or vice versa) or when you use your camcorder in a hot place as follows:
- You bring your camcorder from a ski slope into a place warmed up by a heating device.
- You bring your camcorder from an air-conditioned car or room into a hot place outside.
- You use your camcorder after a squall or a shower.
- You use your camcorder in a high temperature and humidity place.

How to prevent moisture condensation

When you bring your camcorder from a cold place into a warm place, put your camcorder in a plastic bag and tightly seal it. Remove the bag when the air temperature inside the plastic bag has reached the surrounding temperature (after about one hour).

Maintenance information

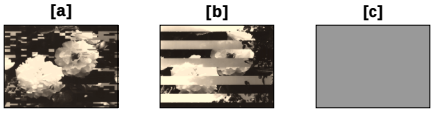
Cleaning the video head

To ensure normal recording and clear pictures, clean the video heads. The video head may be dirty when:

- mosaic-pattern noise appears on the playback picture.
- playback pictures do not move.
- playback pictures do not appear.
- the ⊗ indicator and "CLEANING CASSETTE" message appear one after another or the ⊗ indicator flashes on the screen.

If the above problem, **[a]**, **[b]** or **[c]** occurs, clean the video heads for 10 seconds with the Sony DVM-12CLD cleaning cassette (optional). Check the picture and if the above problem persists, repeat cleaning.

[a] **[b]** **[c]**



If the video heads gets dirtier, the entire screen becomes blue **[c]**.

Cleaning the LCD screen

If fingerprints or dust make the LCD screen dirty, we recommend using a LCD Cleaning Kit (optional) to clean the LCD screen.

Charging the built-in rechargeable battery in your camcorder

Your camcorder is supplied with a built-in rechargeable battry battery installed so as to retain the date and time, etc., regardless of the setting of the POWER switch. The built-in rechargeable battery is always charged as long as you are using your camcorder. The battery, however, will get discharged gradually if you do not use your camcorder. It will be completely discharged in about 4 months if you do not use your camcorder at all. Even if the built-in rechargeable battery is not charged, it will not affect the camcorder operation. To retain the date and time, etc., charge the battery if the battery is discharged.

Charging the built-in rechargeable battery:

- Connect your camcorder to wall outlet using the AC power adaptor supplied with your camcorder, and leave your camcorder with the POWER switch turned off for more than 24 hours.
- Or install the fully charged battery pack in your camcorder, and leave your camcorder with the POWER switch turned off for more than 24 hours.

Precautions

Camcorder operation

- Operate your camcorder on 7.2 V (battery pack) or 8.4 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this operating instructions.
- If any solid object or liquid get inside the casing, unplug your camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF (CHG) when you are not using your camcorder.
- Do not wrap your camcorder with a towel, for example, and operate it. Doing so might cause heat to build up inside.
- Keep your camcorder away from strong magnetic fields or mechanical vibration.
- Do not touch the LCD screen with your fingers or a sharp-pointed object.
- If your camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- While using your camcorder, the back of the LCD screen may heat up. This is not a malfunction.

On handling tapes

- Do not insert anything into the small holes on the rear of the cassette. These holes are used to sense the type and thickness of the tape and if the recording tab is in or out.
- Do not open the tape protect cover or touch the tape.
- Avoid touching or damaging the terminals. To remove dust, clean the terminals with a soft cloth.

Camcorder care

- Remove the tape, and periodically turn on the power, operate the CAMERA and VCR sections and play back a tape for about three minutes when your camcorder is not to be used for a long time.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- Do not let sand get into your camcorder. When you use your camcorder on a sandy beach or in a dusty place, protect it from the sand or dust. Sand or dust may cause your camcorder to malfunction, and sometimes this malfunction cannot be repaired.

AC power adaptor

- Unplug the unit from the wall outlet when you are not using the unit for a long time. To disconnect the power cord, pull it out by the plug. Never pull the power cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the power cord forcibly, or place a heavy object on it. This will damage the cord and may cause fire or electrical shock.
- Prevent metallic objects from coming into contact with the metal parts of the connecting section. If this happens, a short may occur and the unit may be damaged.
- Always keep metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.

- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment. AM receivers and video equipment disturb AM reception and video operation.
- The unit becomes warm during use. This is not a malfunction.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

About care and storage of the lens

- Wipe the surface of the lens clean with a soft cloth in the following instances:
  - When there are fingerprints on the lens surface
  - In hot or humid locations
  - When the lens is used in environments susceptible to salt such as the seaside
- Store the lens in a well-ventilated location subject to little dirt or dust.

To prevent mold from occurring, periodically perform the above.
We recommend turning on and operating the video camera recorder about once per month to keep the video camera recorder in an optimum state for a long time.

Battery pack

- Use only the specified charger or video equipment with the charging function.
- To prevent accident from a short circuit, do not allow metal objects to come into contact with the battery terminals.
- Keep the battery pack away from fire.
- Never expose the battery pack to temperatures above 60°C (140°F), such as in a car parked in the sun or under direct sunlight.
- Keep the battery pack dry.
- Do not expose the battery pack to any mechanical shock.
- Do not disassemble nor modify the battery pack.
- Attach the battery pack to the video equipment securely.

Notes on dry batteries

To avoid possible damage from battery leakage or corrosion, observe the following:

- Be sure to insert the batteries with the + – polarities matched to the + – marks.
- Dry batteries are not rechargeable.
- Do not use a combination of new and old batteries.
- Do not use different types of batteries.
- Current flows from batteries when you are not using them for a long time.
- Do not use leaking batteries.

If batteries are leaking

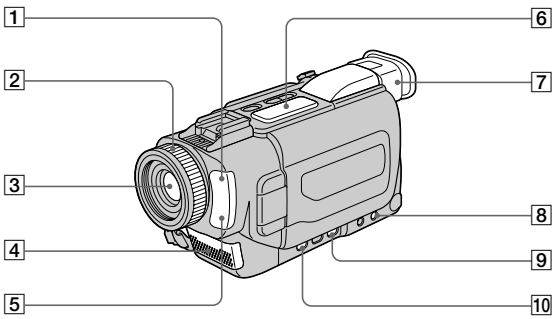
- Wipe off the liquid in the battery compartment carefully before replacing the batteries.
- If you touch the liquid, wash it off with water.
- If the liquid get into your eyes, wash your eyes with a lot of water and then consult a doctor.

If any problem occurs, unplug your camcorder and contact your nearest Sony dealer.

— Quick Reference —

Identifying the parts and controls

Camcorder

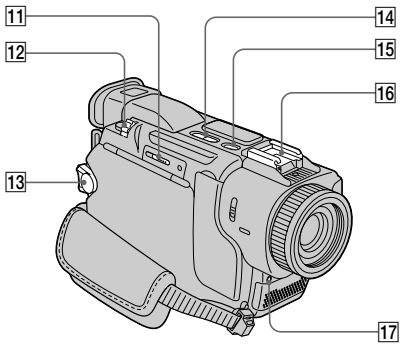


1 **Remote sensor**
2 **Focus ring** (p. 53)
3 **Lens**
4 **Microphone**
5 **Infrared rays emitter** (p. 27, 36, 71)
6 **Display window** (p. 13)
7 **Viewfinder** (p. 24)
8 **MENU button** (p. 96)
9 **BACK LIGHT button** (p. 26)
10 **Focus button** (p. 53)

This mark indicates that this product is a genuine accessory for Sony video products.
When purchasing Sony video products, Sony recommends that you purchase accessories with this "GENUINE VIDEO ACCESSORIES" mark.

Note on the Carl Zeiss lens
Your camcorder is equipped with a Carl Zeiss lens which can reproduce a fine image.
The lens for your camcorder was developed jointly by Carl Zeiss, in Germany, and Sony Corporation. It adopts the MTF* measurement system for video camera and offers a quality as the Carl Zeiss lens.

* MTF is an abbreviation of Modulation Transfer Function.
The value number indicates the amount of light of a subject penetrating into the lens.

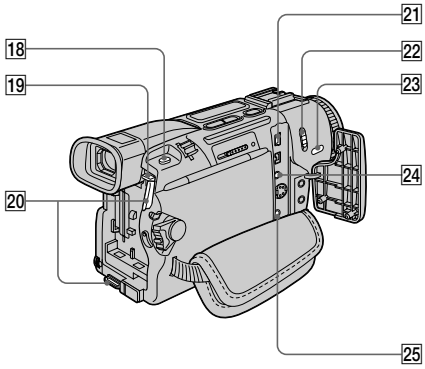


11 **MEMORY EJECT Lever** (DCR-TRV17 only) (p. 105)
12 **Power zoom lever** (p. 24)
13 **POWER switch** (p. 13)
14 **EDITSEARCH button** (p. 30)
15 **SUPER LASER LINK button** (p. 36)
16 **Intelligent accessory shoe** (p. 85)
17 **Camera recording lamp** (p. 21)

Intelligent Accessory Shoe

Notes on the intelligent accessory shoe

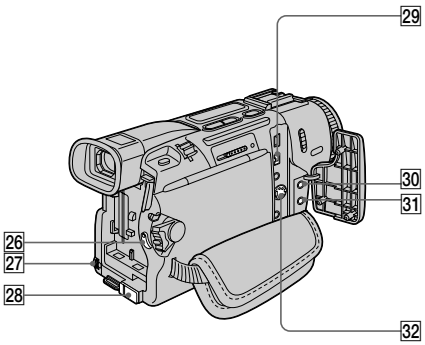
- The intelligent accessory shoe supplies power to optional accessories such as a video light, microphone or printer (DCR-TRV17 only) .
- The intelligent accessory shoe is linked to the POWER switch, allowing you to turn the power supplied by the shoe on and off. Refer to the operating instructions of the accessory for further information.
- The intelligent accessory shoe has a safety device for fixing the installed accessory securely. To connect an accessory, press down and push it to the end, and then tighten the screw.
- To remove an accessory, loosen the screw, and then press down and pull out the accessory.



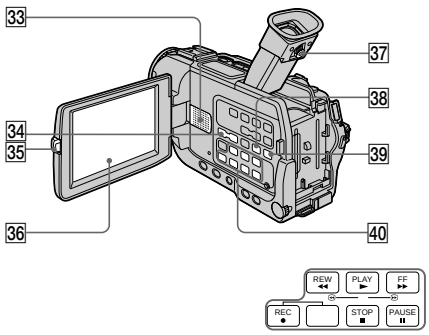
18 **PHOTO button** (p. 38, 112)
19 **BATT release button** (p. 12)
20 **Hooks for sholder strap**
21 **(USB) jack** (DCR-TRV17 only) (p. 135)
22 **NIGHTSHOT switch** (p. 27)
23 **SUPER NIGHTSHOT button** (p. 27)
24 **(LANC) control jack**
LANC stands for Local Application Control Bus System. The control jack is used for controlling the tape transport of video equipment and other peripherals connected to the video equipment. This jack has the same function as the jack indicated as CONTROL L.
25 **AUDIO/VIDEO ID-2 jack** (p. 35, 40, 66, 118, 122)

Attaching the shoulder strap

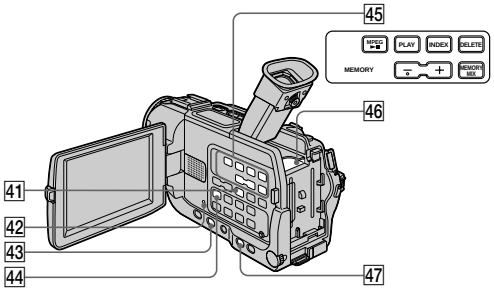
Attach the shoulder strap supplied with your camcorder to the hooks for the shoulder strap.



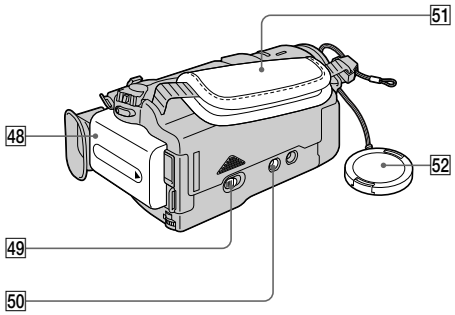
26 **START/STOP button** (p. 21)
27 **SEL/PUSH EXEC dial** (p. 96)
28 **DC IN jack** (p. 17)
29 **DV IN/OUT jack** (p. 67, 119, 123)
30 **(headphones) jack**
When you use headphones, the speaker on your camcorder is silent.
31 **MIC jack (PLUG IN POWER)**
Connect an external microphone (optional). This jack also accepts a "plug-in-power" microphone.
32 **S VIDEO jack** (p. 35, 40, 66, 118, 122)



33 **Speaker**
34 **VOLUME buttons** (p. 31)
35 **OPEN button** (p. 21)
36 **LCD screen** (p. 22)
37 **Viewfinder lens adjustment lever** (p. 24)
38 **END SEARCH button** (p. 30)
39 **PB ZOOM button** (p. 59, 140)
40 **Video control buttons** (p. 33)
■ STOP (stop)
◄◄ REW (rewind)
► PLAY (playback)
►► FF (fastforward)
❚❚ PAUSE (pause)
● REC (record)

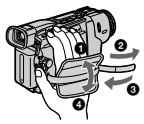


41 **DISPLAY button** (p. 32)
42 **RESET button** (p. 154)
43 **FADER button** (p. 44)
44 **AUDIO DUB button** (p. 87)
45 **MEMORY operation buttons**
(DCR-TRV17 only)
MPEG ►II button (p. 132)
MEMORY PLAY button (p. 129)
MEMORY INDEX button (p. 131)
MEMORY DELETE button (p. 144)
MEMORY +/– buttons (p. 129)
MEMORY MIX button (p. 125)
46 **"Memory Stick" slot** (DCR-TRV17 only)
47 **EXPOSURE button** (p. 52)



48 **Battery pack** (p. 13)
49 **OPEN/EJECT lever** (p. 20)
50 **Tripod receptacle**
Make sure that the length of the tripod screw is less than 6.5 mm (9/32 inch). Otherwise, you cannot attach the tripod securely and the screw may damage your camcorder.
51 **Grip strap**
52 **Lens cap** (p. 21)

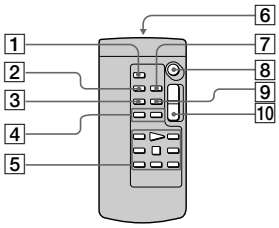
Fastening the grip strap



Fasten the grip strap firmly.

Remote Commander

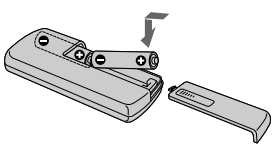
The buttons that have the same name on the Remote Commander as on your camcorder function identically to the buttons on your camcorder.



1 **PHOTO button** (p. 38, 112)
2 **DISPLAY button** (p. 32)
3 **SEARCH MODE button** (p. 61, 62, 64)
4 **I◄◄/►►I buttons** (p. 61, 62, 64)
5 **Tape transport buttons** (p. 33)
6 **Transmitter**
Point toward the remote sensor to control the camcorder after turning on the camcorder.
7 **ZERO SET MEMORY button** (p. 60, 83)
8 **START/STOP button** (p. 21)
9 **DATA CODE button** (p. 32)
10 **Power zoom button** (p. 24)

To prepare the Remote Commander

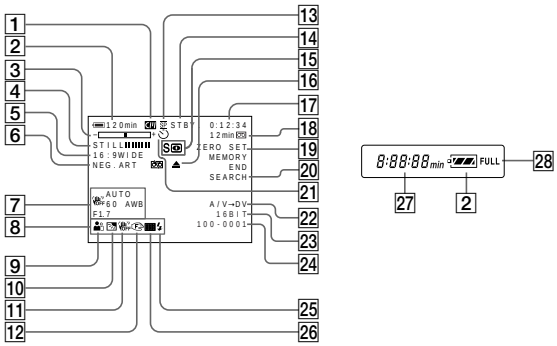
Insert 2 size AA (R6) batteries by matching the + and – polarities on the batteries to the + – marks inside the battery compartment.



Notes on the Remote Commander

- Point the remote sensor away from strong light sources such as direct sunlight or overhead lighting. Otherwise, the Remote Commander may not function properly.
- Your camcorder works in the Commander mode VTR 2. Commander modes 1, 2 and 3 are used to distinguish your camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in the Commander mode VTR 2, we recommend changing the Commander mode or covering the sensor of the VCR with black paper.

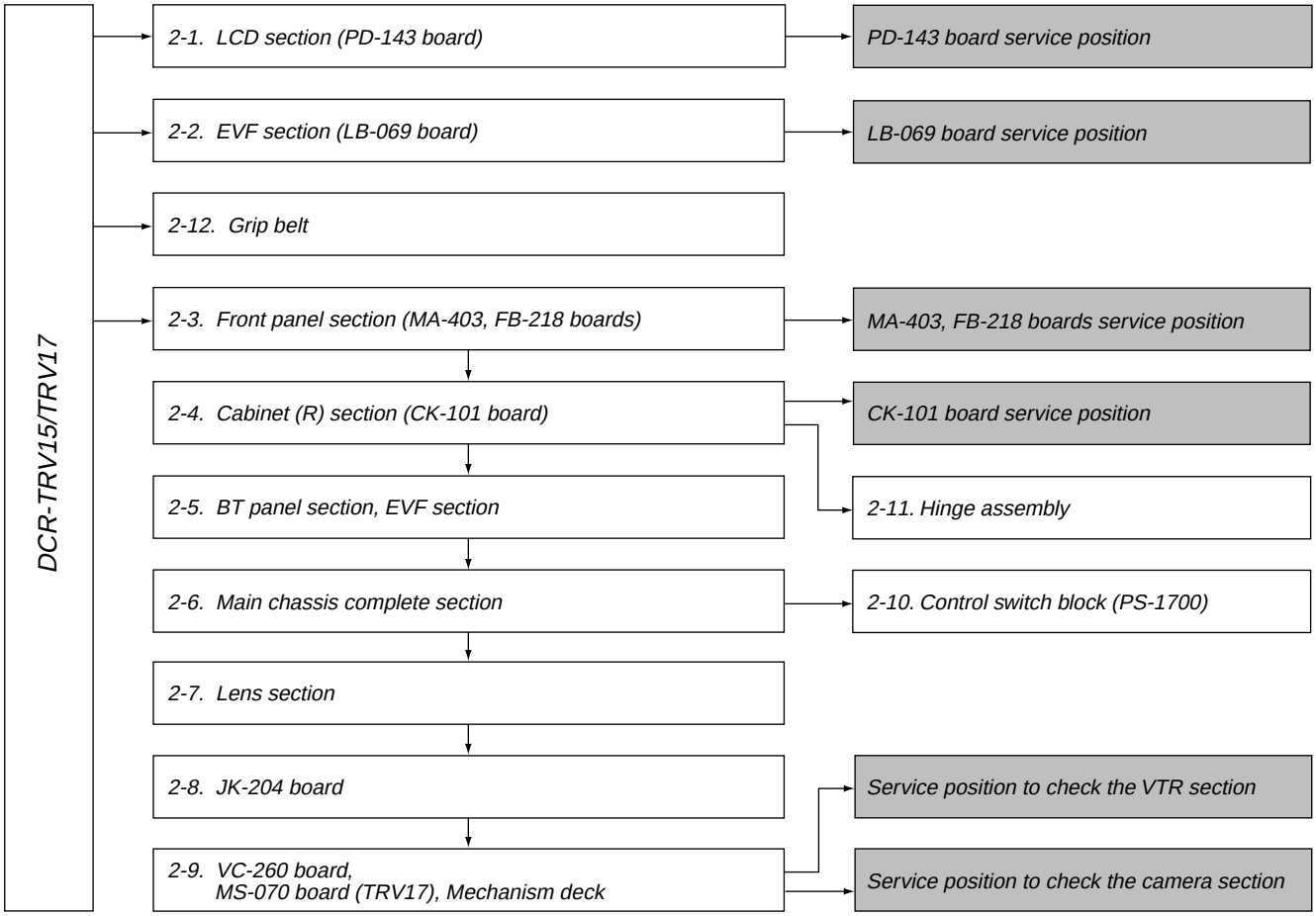
Operation indicators



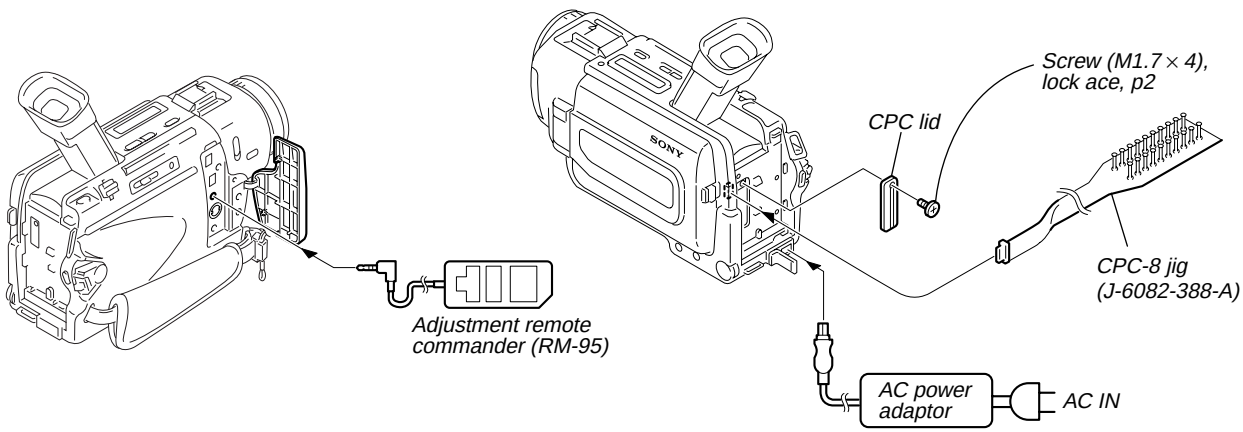
1 **Cassette memory indicator** (p. 25, 158)
2 **Remaining battery time indicator** (p. 25)
3 **Zoom indicator** (p. 25)**/Exposure indicator** (p. 52)**/Data file name indicator** (DCR-TRV17 only) (p. 125)
4 **Digital effect indicator** (p. 47)**/MEMORY MIX indicator** (DCR-TRV17 only) (p. 125)**/FADER indicator** (p. 44)
5 **16:9WIDE indicator** (p. 42)
6 **Picture effect indicator** (p. 45)
7 **Data code indicator** (p. 32)
8 **LCD bright indicator** (p. 23)**/Volume indicator** (p. 31)**/Date indicator** (p. 25)**/Time indicator** (p. 25)
9 **PROGRAM AE indicator** (p. 49)
10 **Backlight indicator** (p. 26)
11 **SteadyShot off indicator** (p. 97)
12 **Manual focus/Infinity indicator** (p. 53)
13 **Recording mode indicator** (p. 25, 101)
14 **STBY/REC indicator** (p. 21)**/Video control mode indicator** (p. 33)**/Image size indicator** (DCR-TRV17 only) (p. 108)**/Image quality mode indicator** (DCR-TRV17 only) (p. 107)
15 **NIGHTSHOT** (p. 27)**/SUPER NIGHTSHOT indicator** (p. 27)
16 **Warning indicators** (p. 156)
17 **Tape counter indicator** (p. 25)**/Time code indicator** (p. 25)**/Self-diagnosis indicator** (p. 155)**/Tape photo indicator** (p. 38)/**Memory photo indicator** (DCR-TRV17 only) (p. 112)**/Image number indicator** (DCR-TRV17 only) (p. 130)
18 **Remaining tape indicator** (p. 25)**/Memory playback indicator** (DCR-TRV17 only) (p. 130)
19 **ZERO SET MEMORY indicator** (p. 60)
20 **END SEARCH indicator** (p. 30)
21 **Self-timer indicator** (p. 28)
22 **A/V → DV indicator** (p. 79)**/DV IN indicator** (p. 82)
23 **Audio mode indicator** (p. 101)
24 **Data file name indicator*** (DCR-TRV17 only) (p. 125)**/Time indicator** (p. 25)
*This indicator appears when the MEMORY MIX functions work.
25 **Video flash ready indicator**
This indicator appears when you use the video flash light (optional).
26 **Continuous mode indicator** (DCR-TRV17 only) (p. 114)
27 **Remaining battery time indicator** (p. 25)**/Tape counter** (p. 25)**/Memory counter** (DCR-TRV17 only)**/Time code indicator** (p. 25)**/Self-diagnosis indicator** (p. 155)
28 **FULL charge indicator** (p. 13)

SECTION 2
DISASSEMBLY

The following flow chart shows the disassembly procedure.

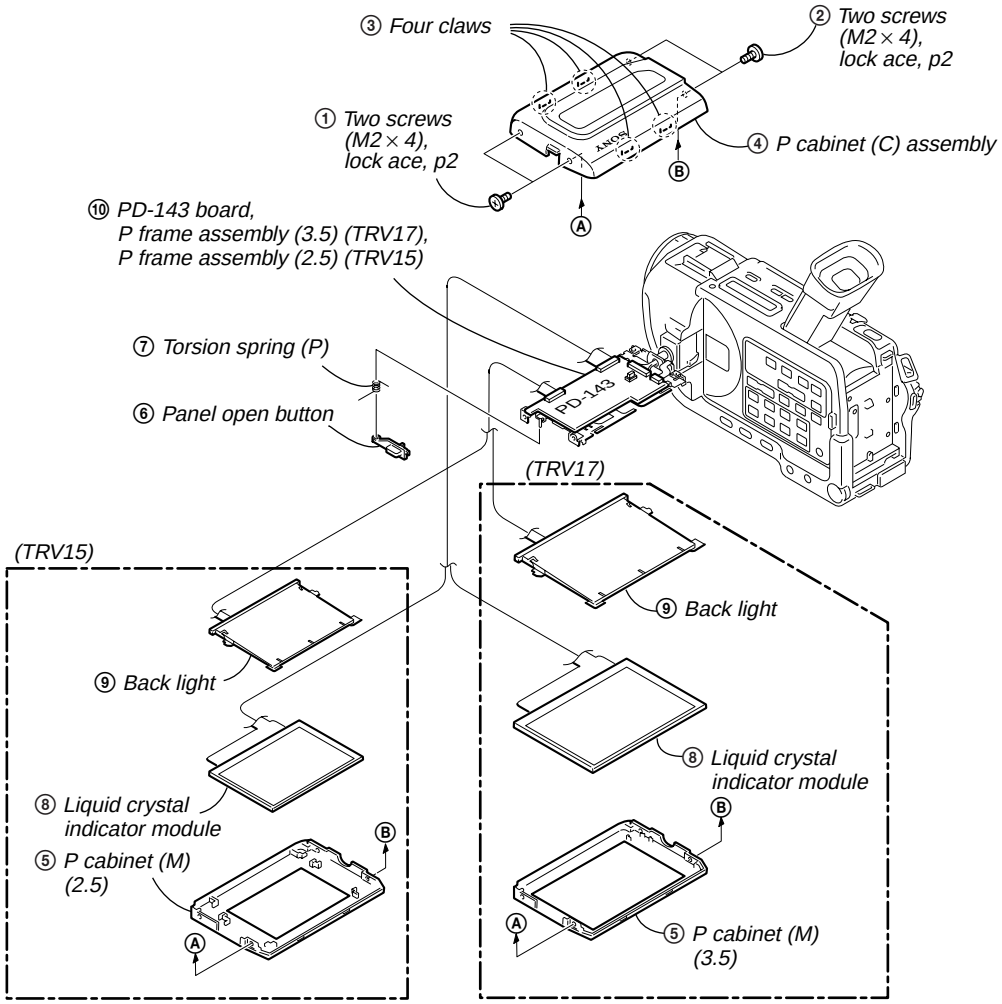

DCR-TRV15/TRV17
2-1. LCD section (PD-143 board)
PD-143 board service position
2-2. EVF section (LB-069 board)
LB-069 board service position
2-12. Grip belt
2-3. Front panel section (MA-403, FB-218 boards)
MA-403, FB-218 boards service position
2-4. Cabinet (R) section (CK-101 board)
CK-101 board service position
2-5. BT panel section, EVF section
2-11. Hinge assembly
2-6. Main chassis complete section
2-10. Control switch block (PS-1700)
2-7. Lens section
2-8. JK-204 board
Service position to check the VTR section
2-9. VC-260 board,
MS-070 board (TRV17), Mechanism deck
Service position to check the camera section

[Equipment connection]

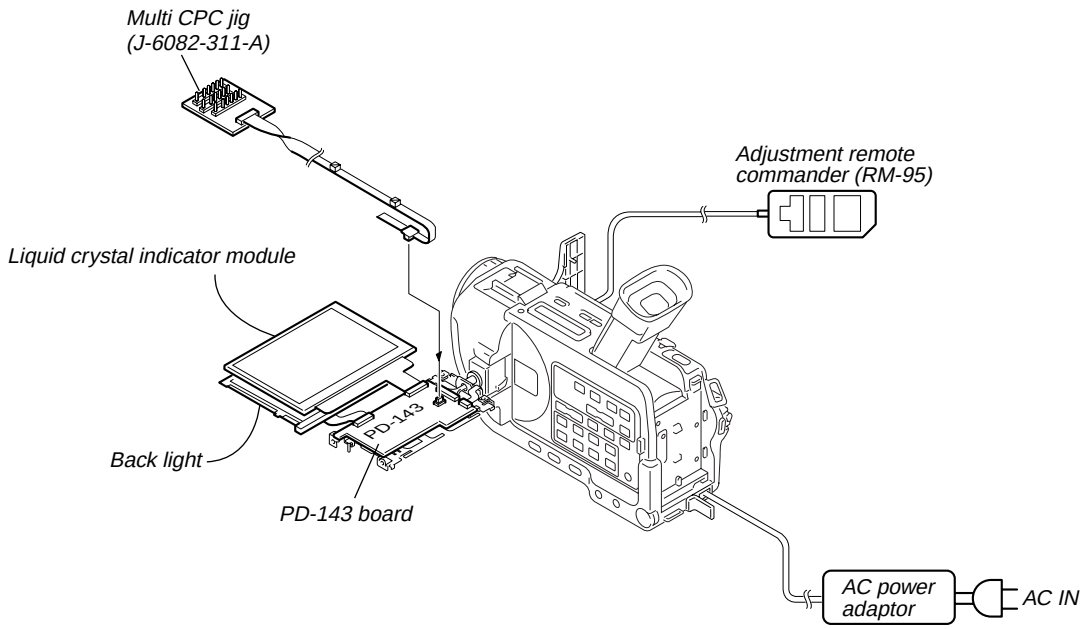


NOTE: Follow the disassembly procedure in the numerical order given.

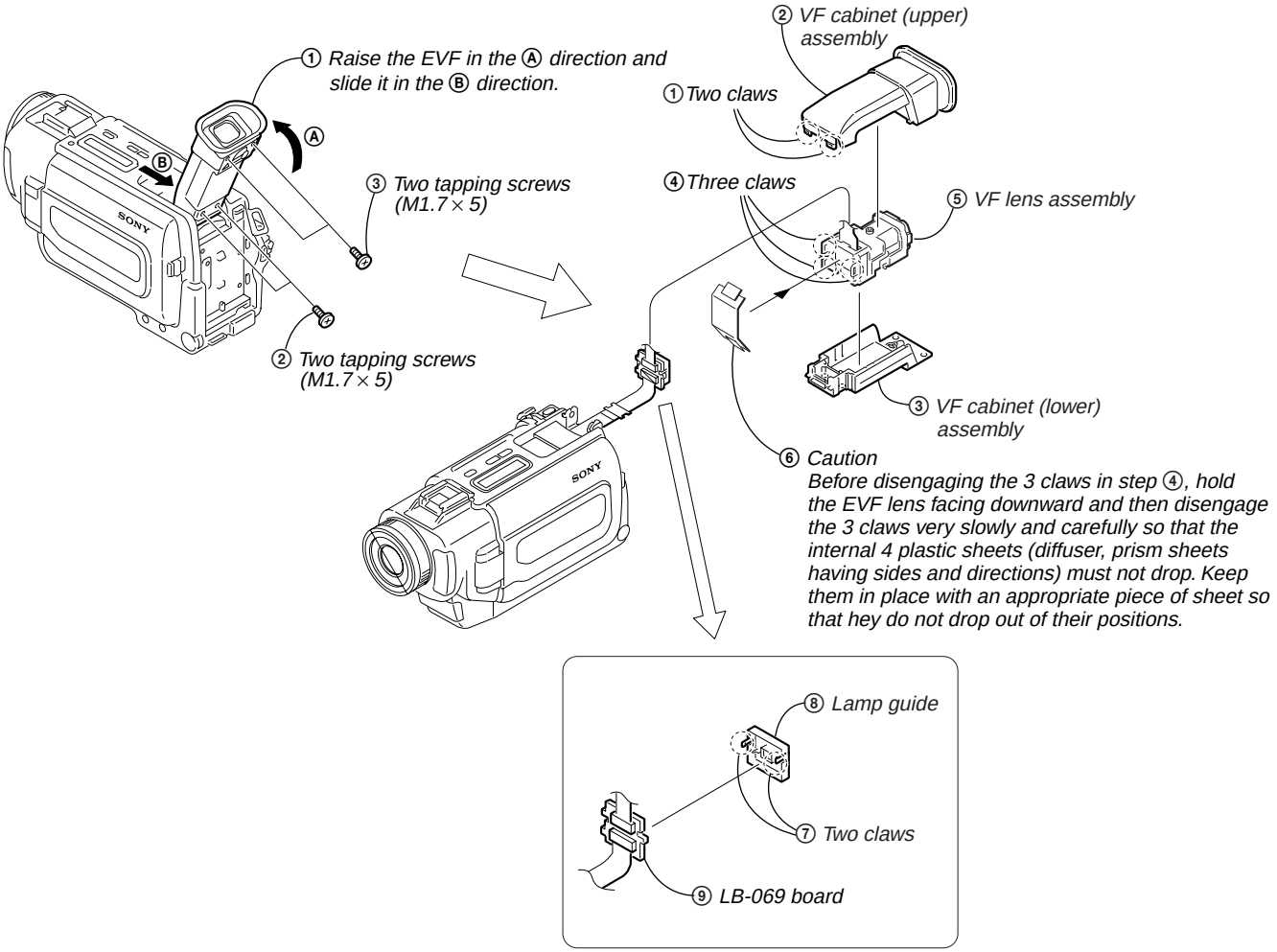
2-1. LCD SECTION (PD-143 BOARD)


③ Four claws
② Two screws (M2 × 4), lock ace, p2
① Two screws (M2 × 4), lock ace, p2
④ P cabinet (C) assembly
⑩ PD-143 board, P frame assembly (3.5) (TRV17), P frame assembly (2.5) (TRV15)
⑦ Torsion spring (P)
⑥ Panel open button
PD-143
(TRV17)
(TRV15)
⑨ Back light
⑧ Liquid crystal indicator module
⑤ P cabinet (M) (2.5)
⑤ P cabinet (M) (3.5)
A
B

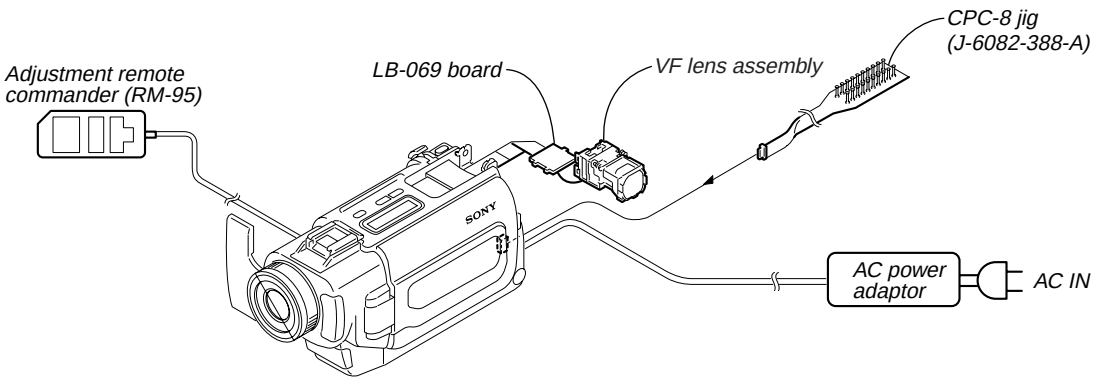
[PD-143 BOARD SERVICE POSITION]



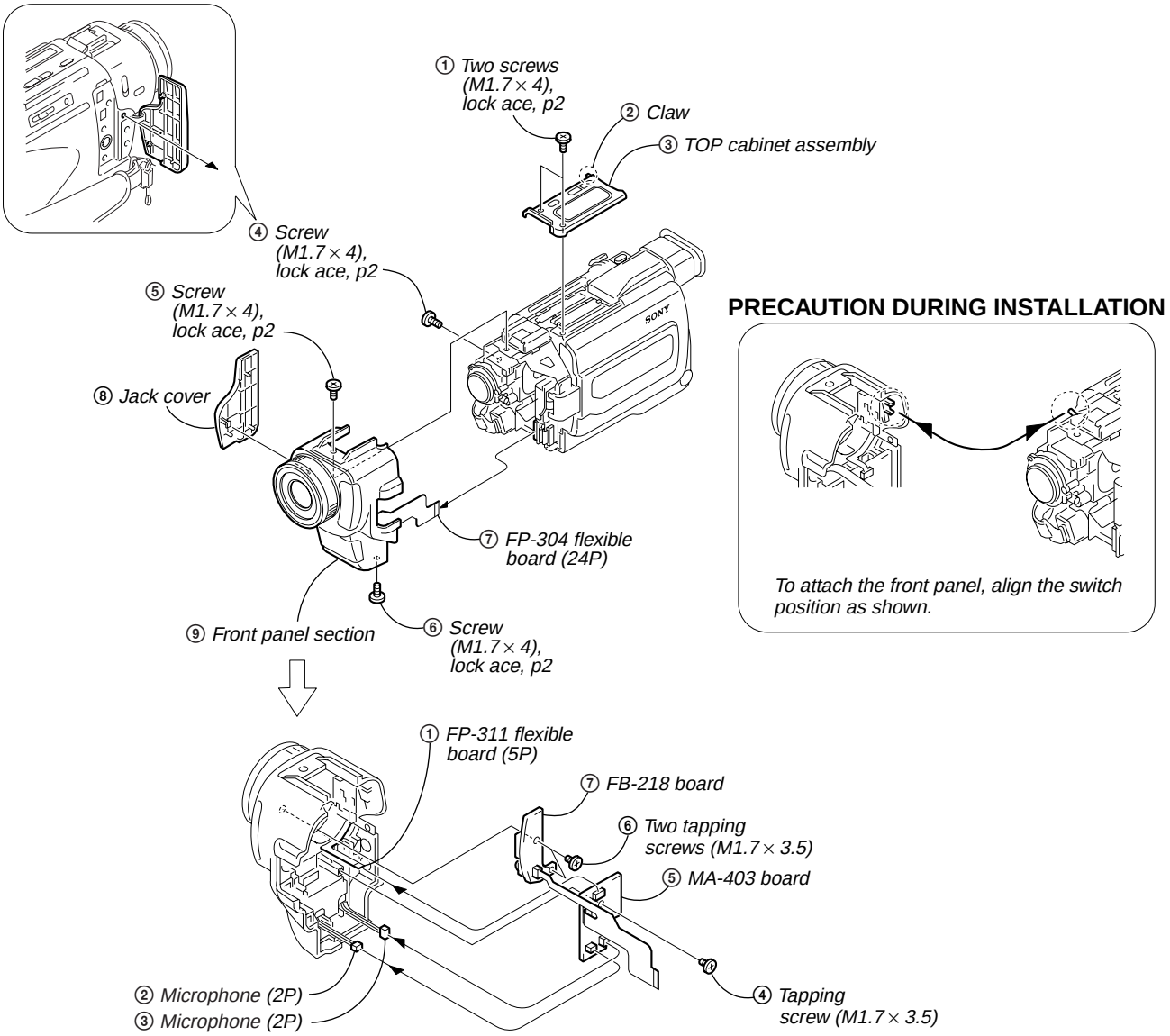
2-2. EVF SECTION (LB-069 BOARD)


① Raise the EVF in the Ⓐ direction and slide it in the Ⓑ direction.
② VF cabinet (upper) assembly
① Two claws
③ Two tapping screws (M1.7 × 5)
④ Three claws
⑤ VF lens assembly
② Two tapping screws (M1.7 × 5)
③ VF cabinet (lower) assembly
⑥ Caution
Before disengaging the 3 claws in step ④, hold the EVF lens facing downward and then disengage the 3 claws very slowly and carefully so that the internal 4 plastic sheets (diffuser, prism sheets having sides and directions) must not drop. Keep them in place with an appropriate piece of sheet so that hey do not drop out of their positions.
⑧ Lamp guide
⑦ Two claws
⑨ LB-069 board

[LB-069 BOARD SERVICE POSITION]



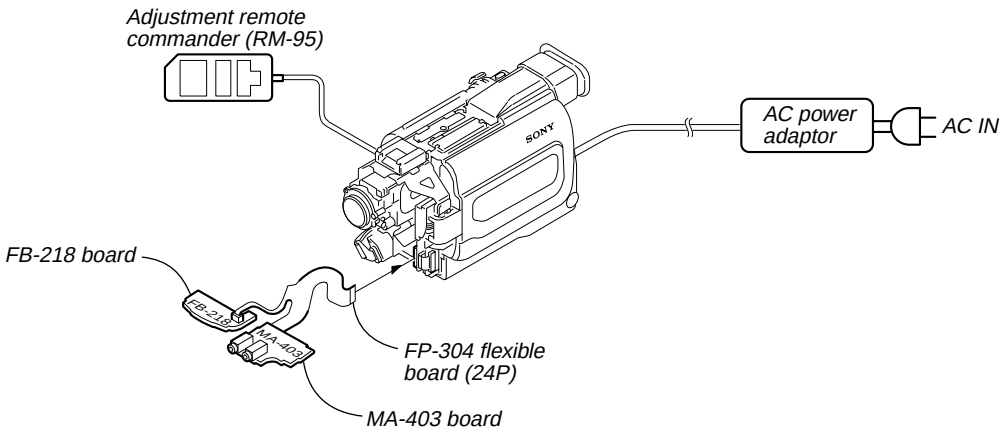
2-3. FRONT PANEL SECTION (MA-403, FB-218 BOARDS)


① Two screws (M1.7 × 4), lock ace, p2
② Claw
③ TOP cabinet assembly
④ Screw (M1.7 × 4), lock ace, p2
⑤ Screw (M1.7 × 4), lock ace, p2
⑧ Jack cover
⑦ FP-304 flexible board (24P)
⑨ Front panel section
⑥ Screw (M1.7 × 4), lock ace, p2
① FP-311 flexible board (5P)
⑦ FB-218 board
⑥ Two tapping screws (M1.7 × 3.5)
⑤ MA-403 board
② Microphone (2P)
③ Microphone (2P)
④ Tapping screw (M1.7 × 3.5)

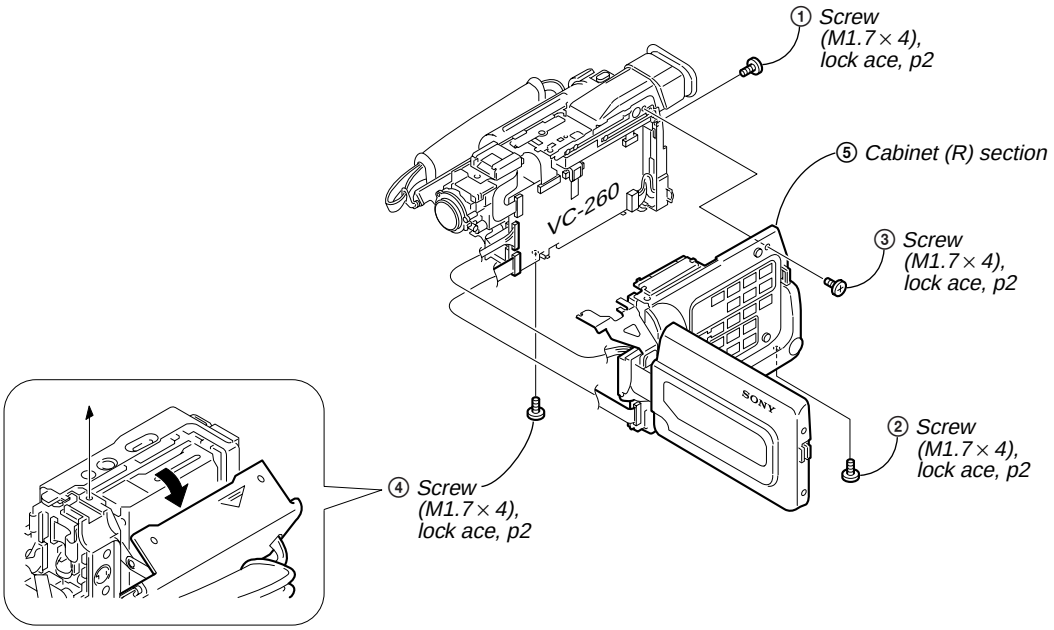
PRECAUTION DURING INSTALLATION

To attach the front panel, align the switch position as shown.

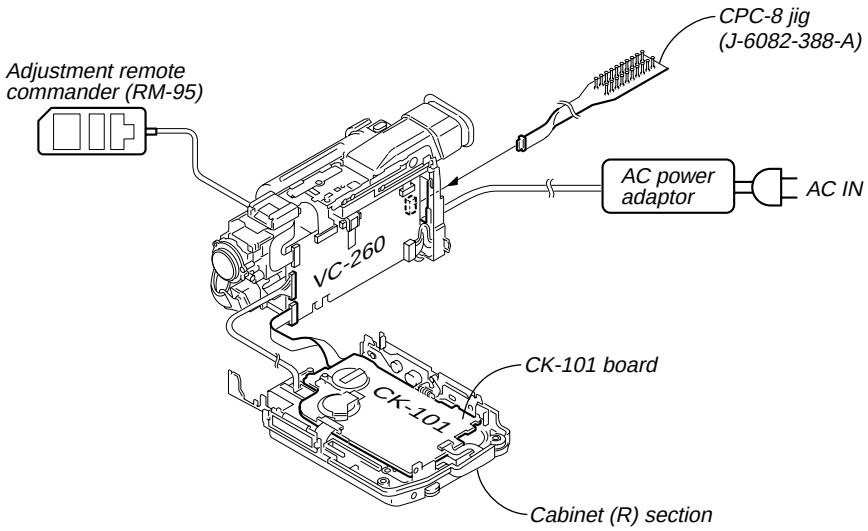
[MA-403, FB-218 BOARDS SERVICE POSITION]



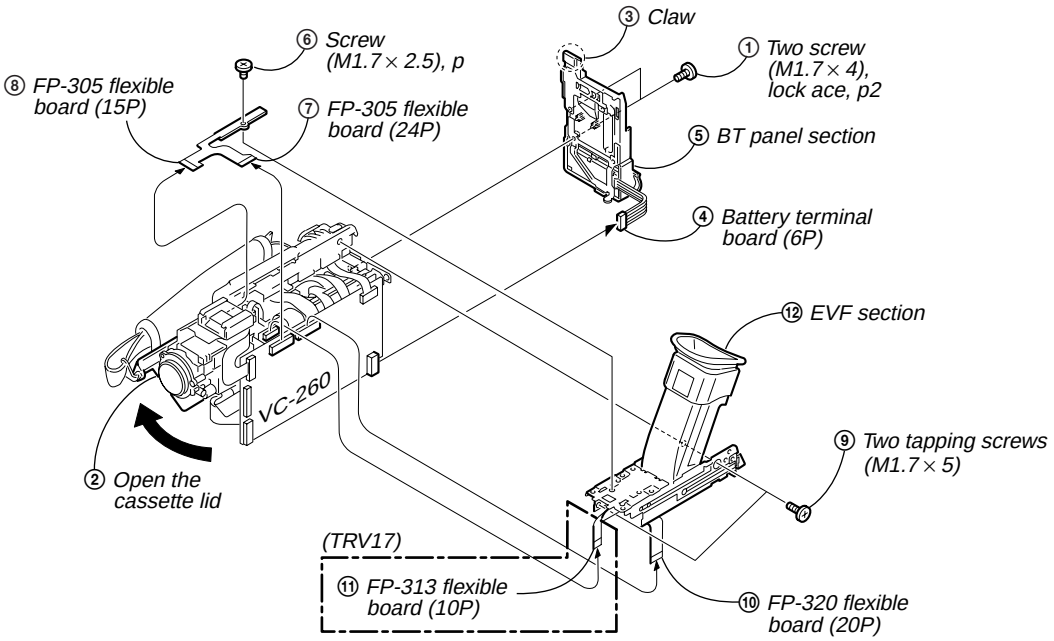
2-4. CABINET (R) SECTION (CK-101 BOARD)



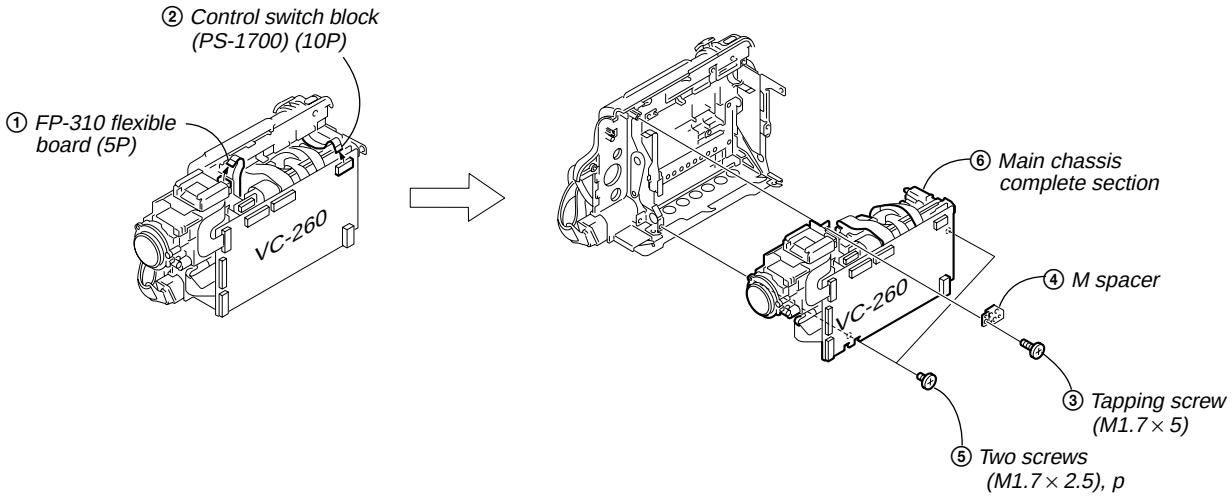
[CK-101 BOARD SERVICE POSITION]



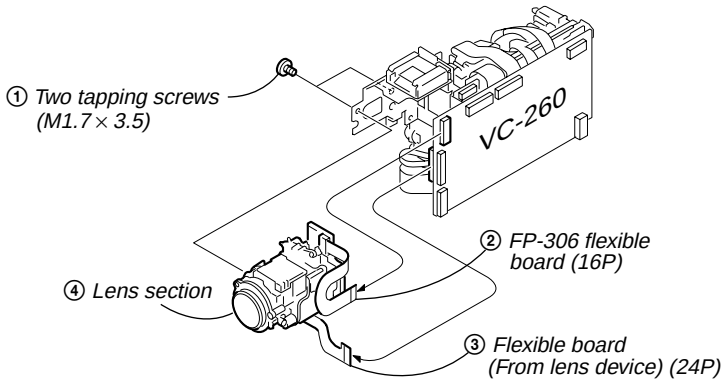
2-5. BT PANEL SECTION, EVF SECTION


③ Claw
⑥ Screw (M1.7× 2.5), p
① Two screw (M1.7× 4), lock ace, p2
⑧ FP-305 flexible board (15P)
⑦ FP-305 flexible board (24P)
⑤ BT panel section
④ Battery terminal board (6P)
⑫ EVF section
VC-260
⑨ Two tapping screws (M1.7× 5)
② Open the cassette lid
(TRV17)
⑪ FP-313 flexible board (10P)
⑩ FP-320 flexible board (20P)

2-6. MAIN CHASSIS COMPLATE SECTION

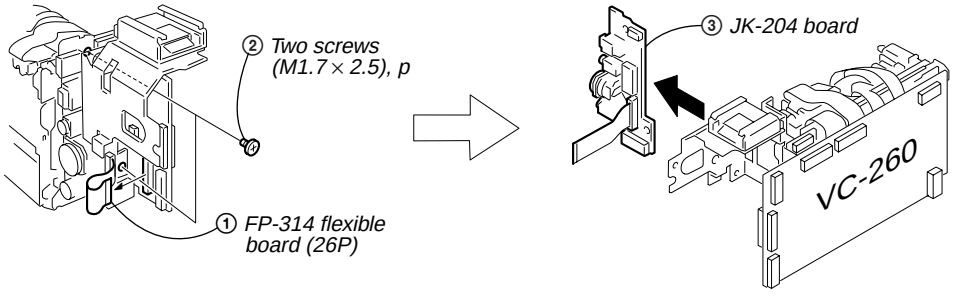

② Control switch block (PS-1700) (10P)
① FP-310 flexible board (5P)
VC-260
⑥ Main chassis complete section
④ M spacer
VC-260
③ Tapping screw (M1.7× 5)
⑤ Two screws (M1.7× 2.5), p

2-7. LENS SECTION

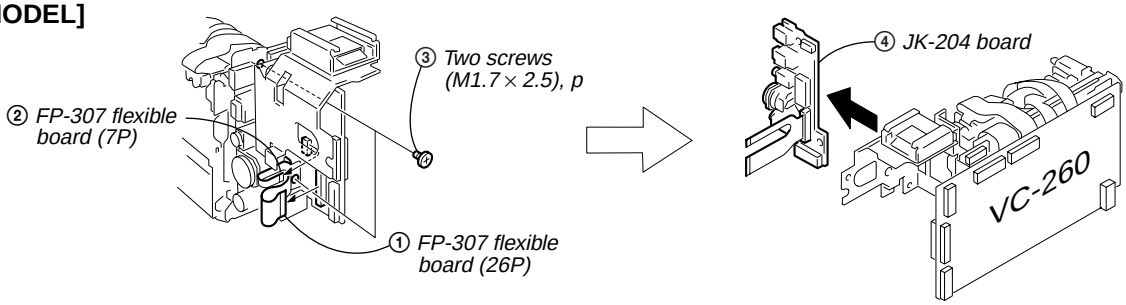


2-8. JK-204 BOARD

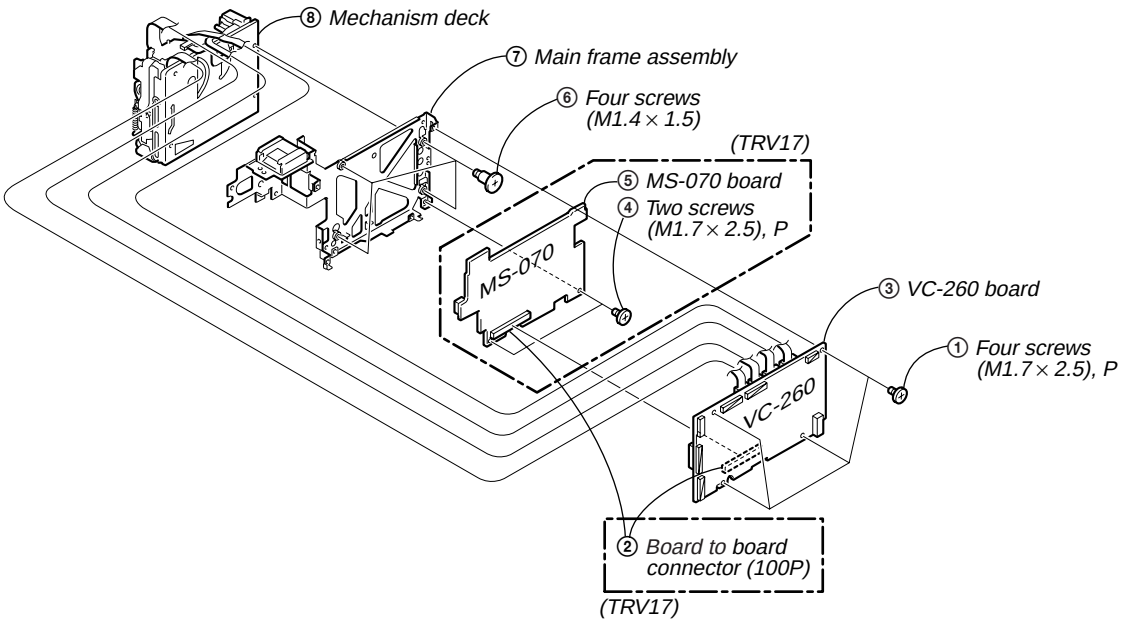
[TRV15 MODEL]



[TRV17 MODEL]



2-9. VC-260 BOARD, MS-070 BOARD (TRV17), MECHANISM DECK



[SERVICE POSITION TO CHECK THE VTR SECTION]

Connection to Check the VTR Section

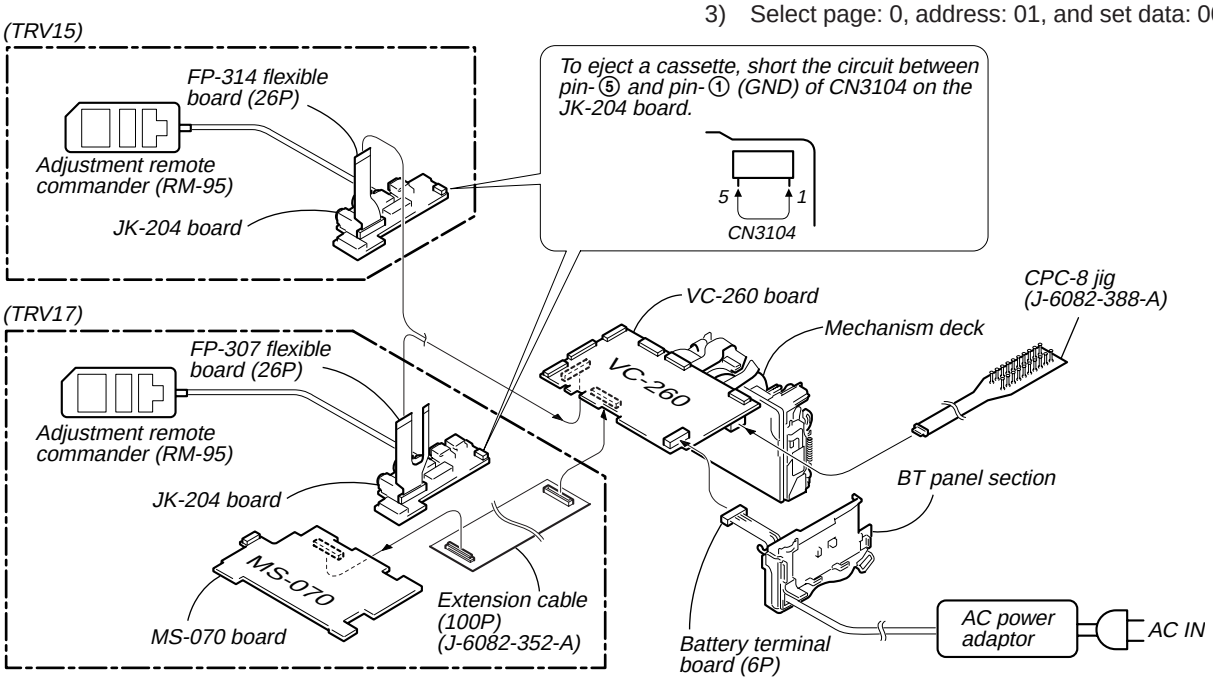
To check the VTR Section, set the VTR to the "forced VTR power ON" mode.
Operate the VTR functions using the adjustment remote commander (with the HOLD switch set in the OFF position)

Setting the "Forced VTR Power ON" mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 02, and press the PAUSE button of the adjustment remote commander.

Exiting the "Forced VTR Power ON" mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
3) Select page: 0, address: 01, and set data: 00.



[SERVICE POSITION TO CHECK THE CAMERA SECTION]

Connection to Check the CAMERA Section

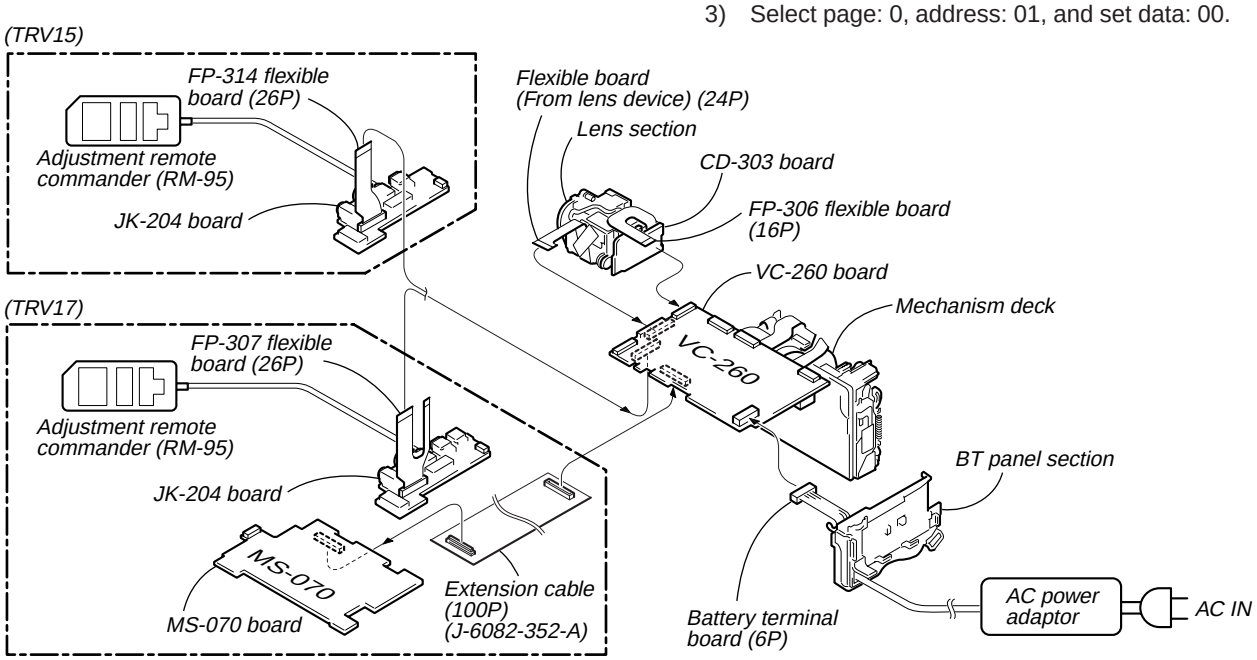
To check the CAMERA Section, set the CAMERA to the "forced CAMERA power ON" mode.
When you want to operate the ZOOM and FOCUS, use the controls on the remote commander (with HOLD switch off).

Setting the "Forced CAMERA Power ON" mode

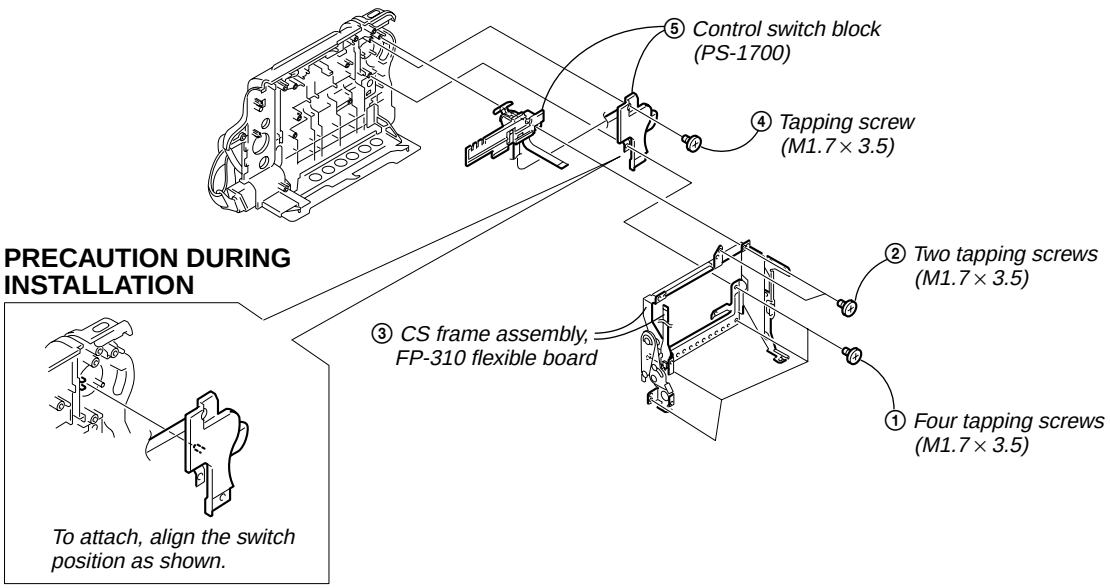
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjustment remote commander.

Exiting the "Forced CAMERA Power ON" mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
3) Select page: 0, address: 01, and set data: 00.

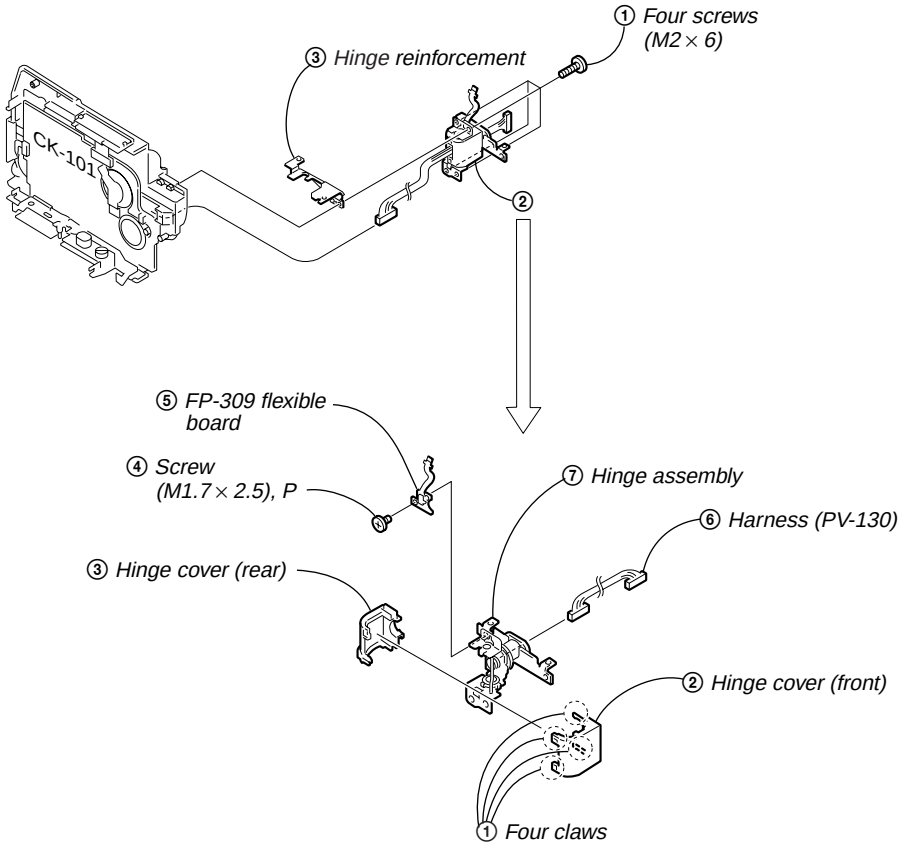


2-10. CONTROL SWITCH BLOCK (PS-1700)

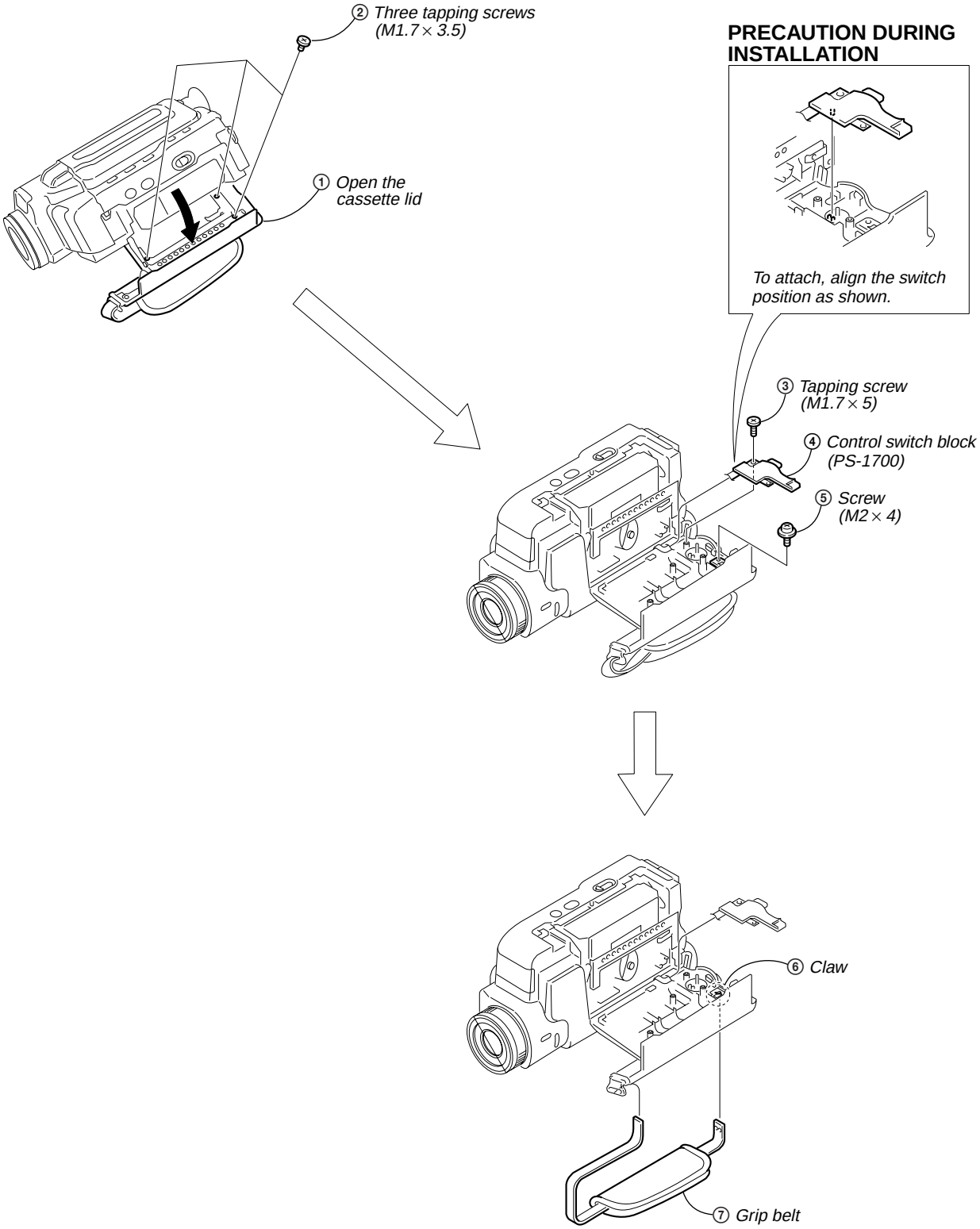

⑤ Control switch block (PS-1700)
④ Tapping screw (M1.7 × 3.5)
② Two tapping screws (M1.7 × 3.5)
③ CS frame assembly, FP-310 flexible board
① Four tapping screws (M1.7 × 3.5)
PRECAUTION DURING INSTALLATION
To attach, align the switch position as shown.

2-11. HINGE ASSEMBLY

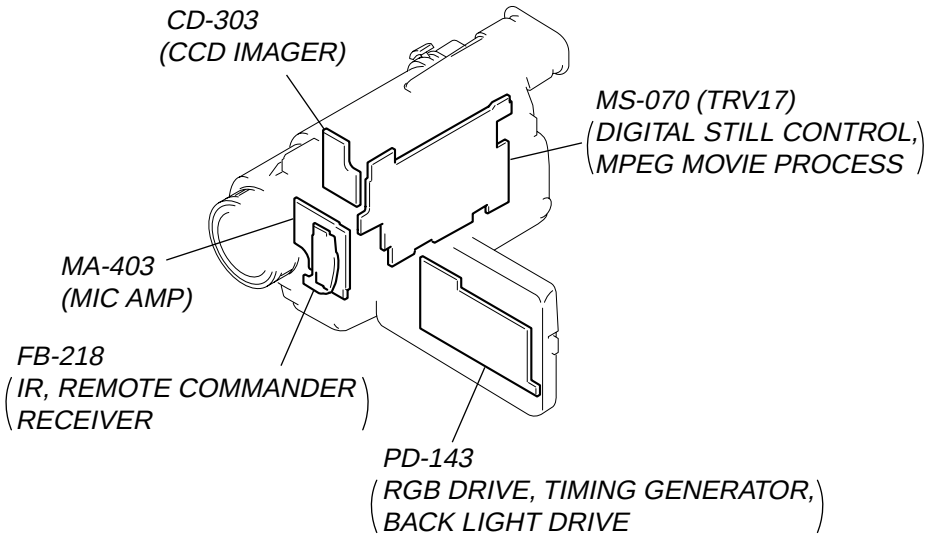
Remove the LCD unit referring to section “2-1. DISASSEMBLY” before starting the following disassembling work.

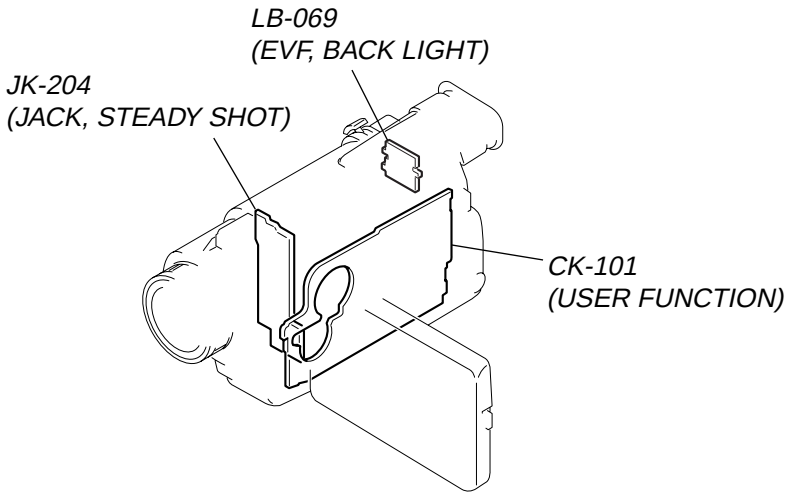


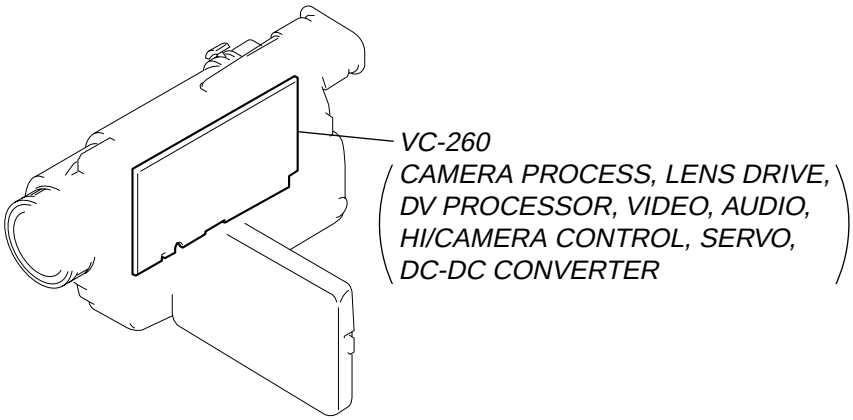
2-12. GRIP BELT


② Three tapping screws (M1.7 × 3.5)
① Open the cassette lid
PRECAUTION DURING INSTALLATION
To attach, align the switch position as shown.
③ Tapping screw (M1.7 × 5)
④ Control switch block (PS-1700)
⑤ Screw (M2 × 4)
⑥ Claw
⑦ Grip belt

2-13. CIRCUIT BOARDS LOCATION

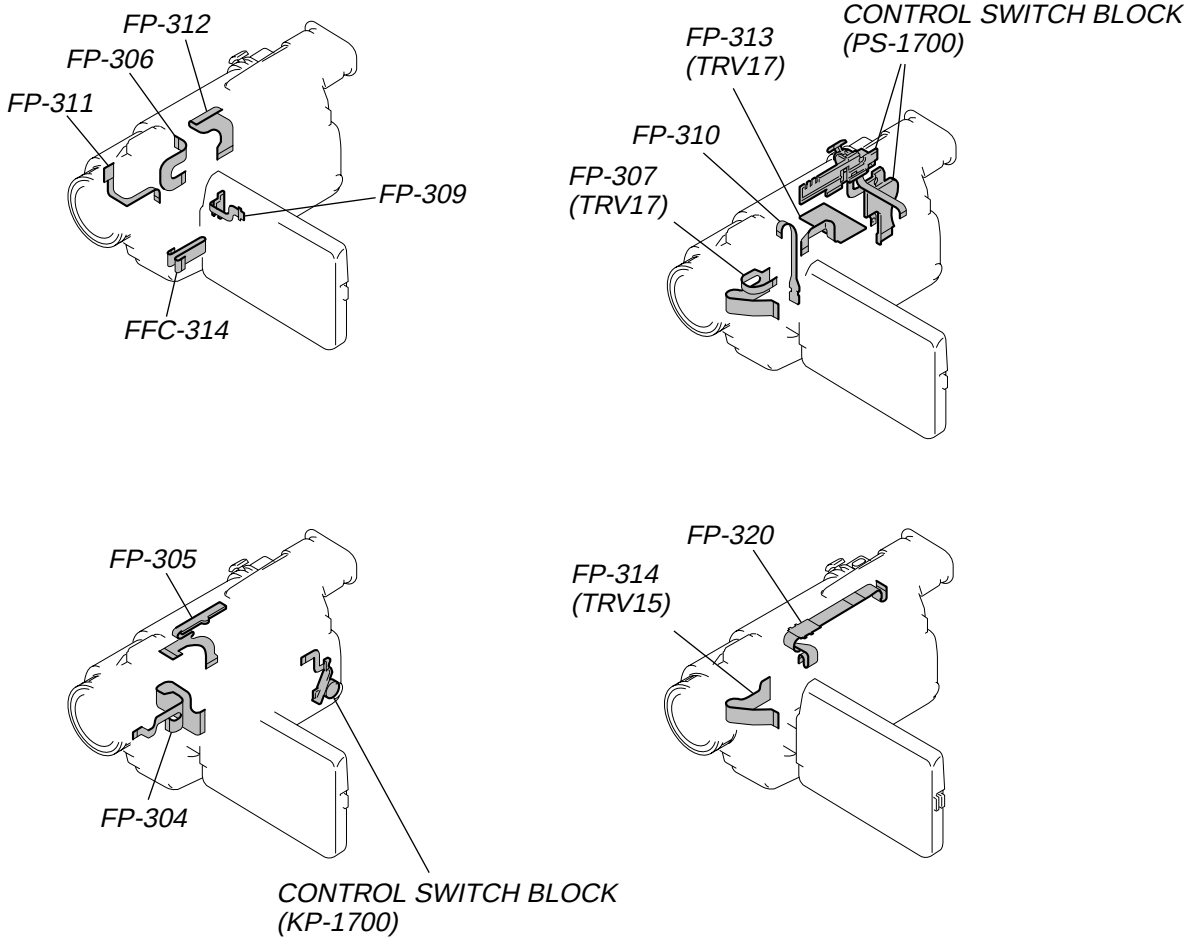






2-14. FLEXIBLE BOARDS LOCATION

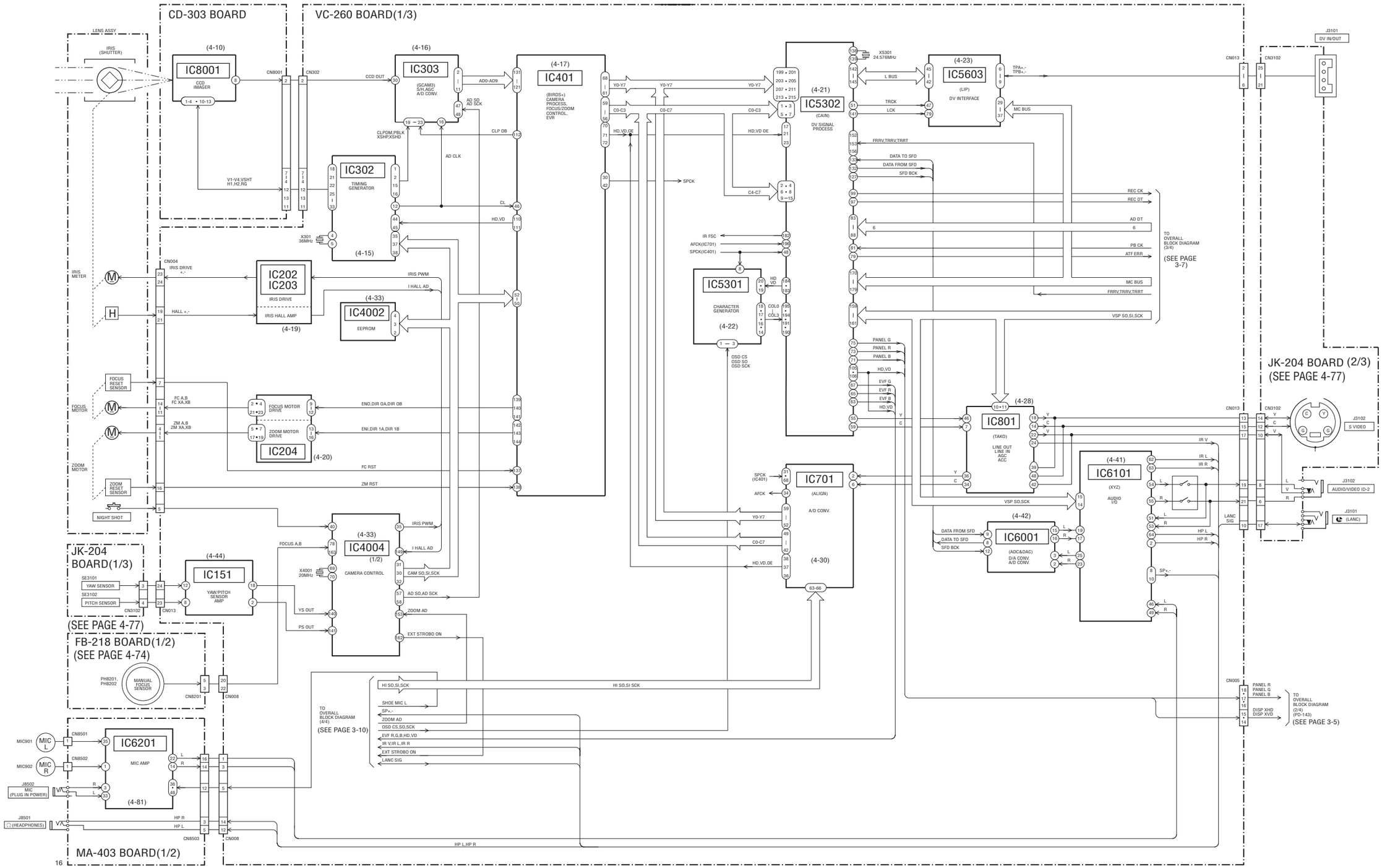
The flexible boards contained in the mechanism deck and that in the zoom lens are not shown.



SECTION 3
BLOCK DIAGRAMS

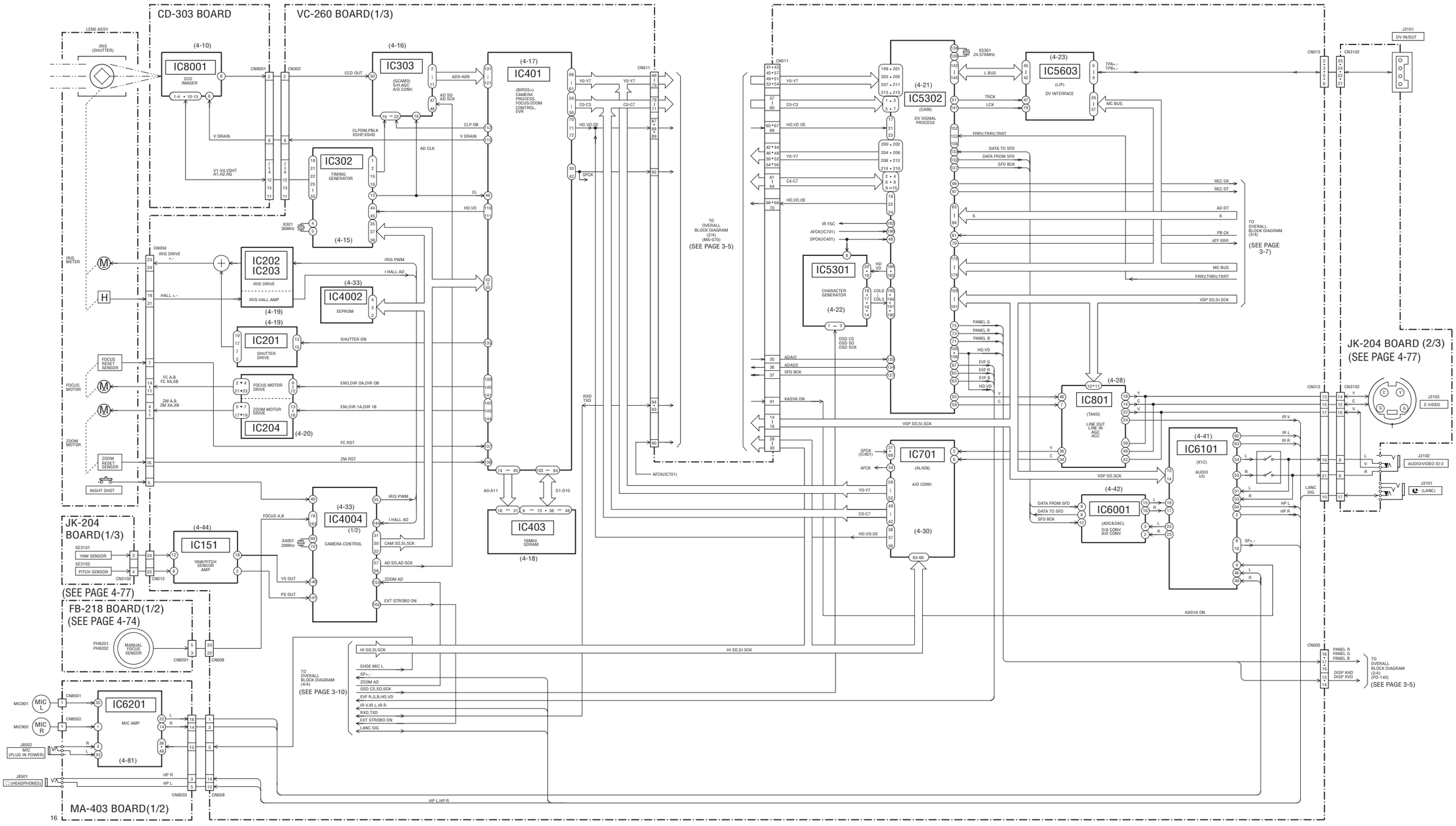
3-1. OVERALL BLOCK DIAGRAM (1/4)(DCR-TRV15)

( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.



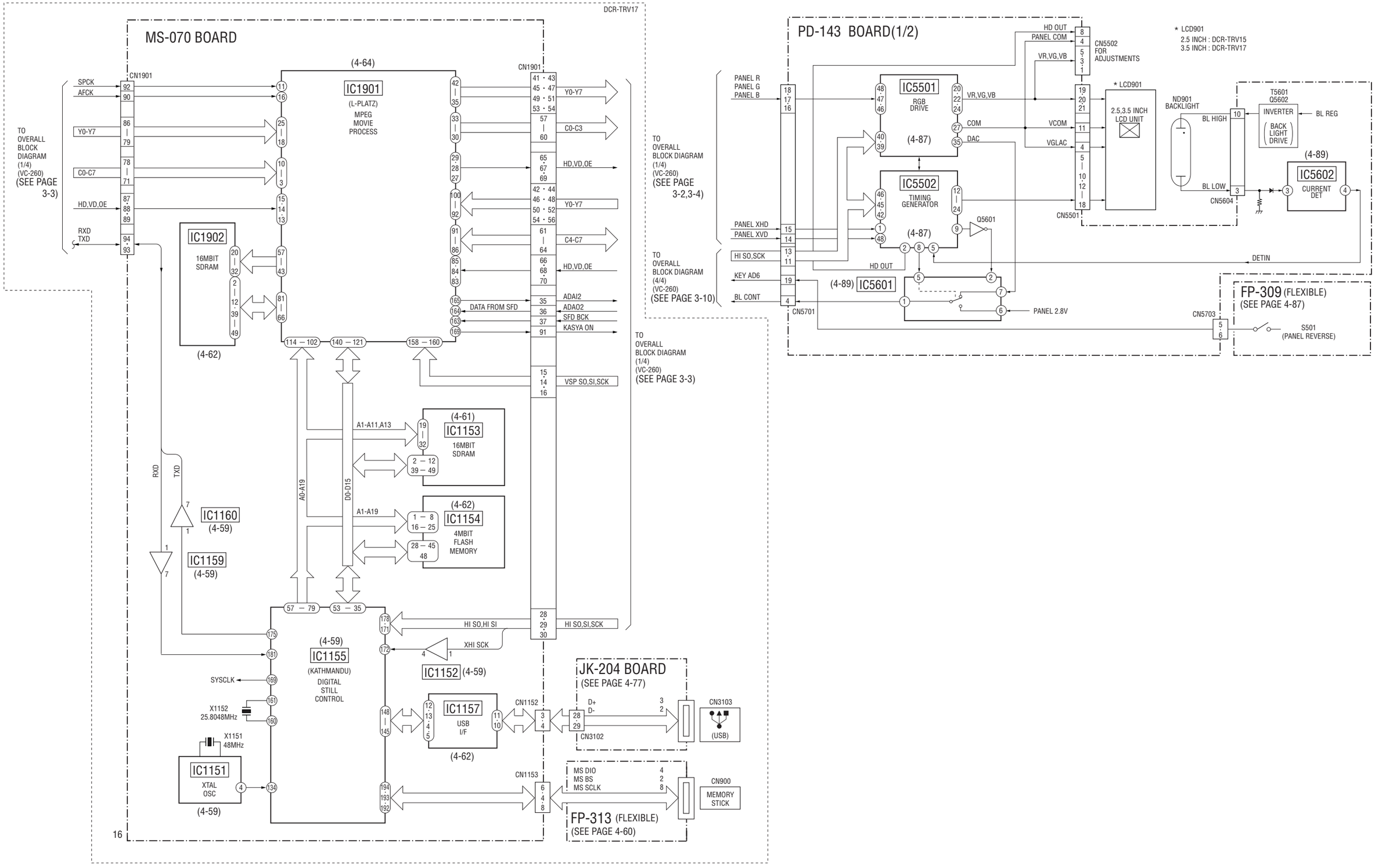
3-2. OVERALL BLOCK DIAGRAM (1/4)(DCR-TRV17)

( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.



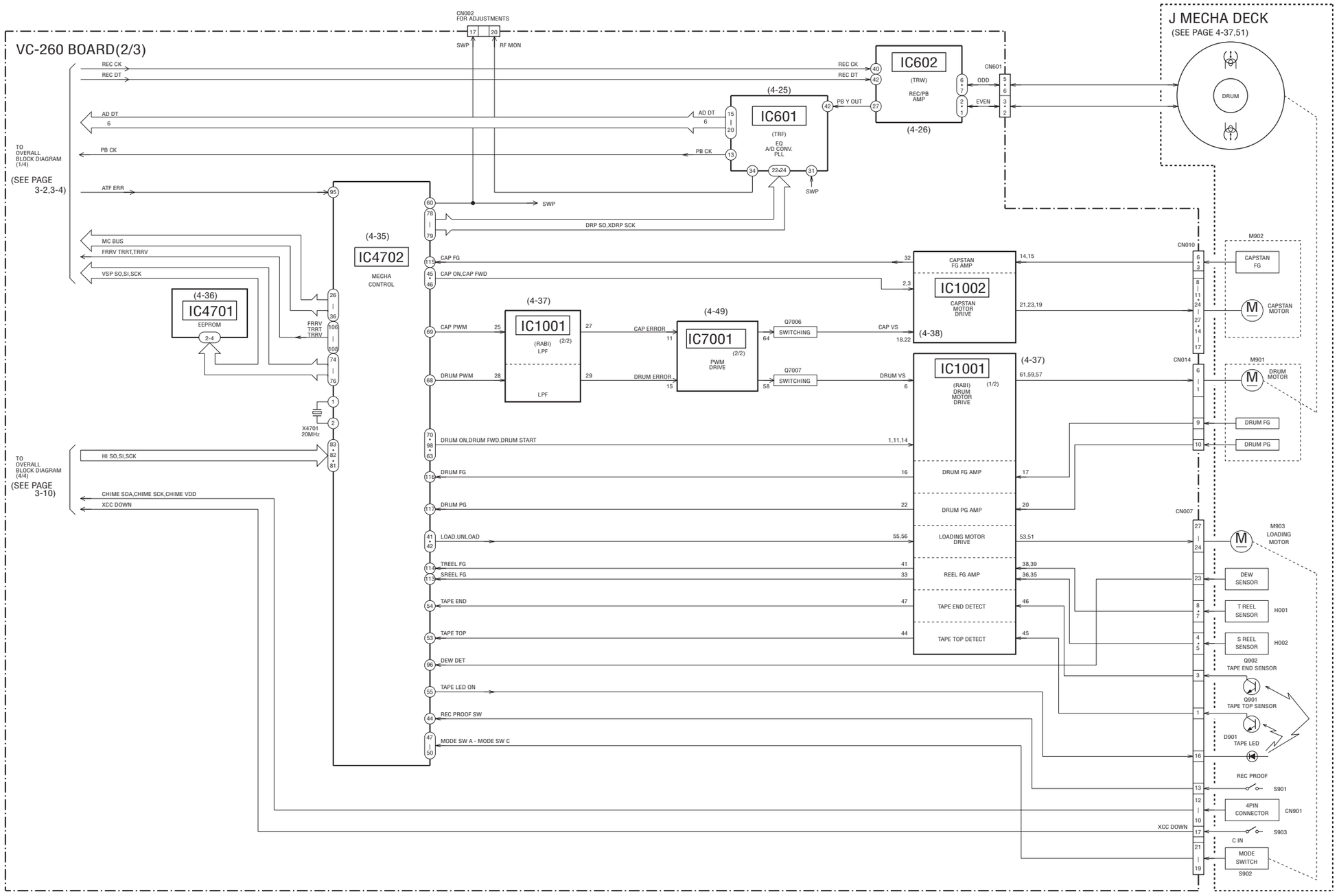
3-3. OVERALL BLOCK DIAGRAM (2/4)

( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.



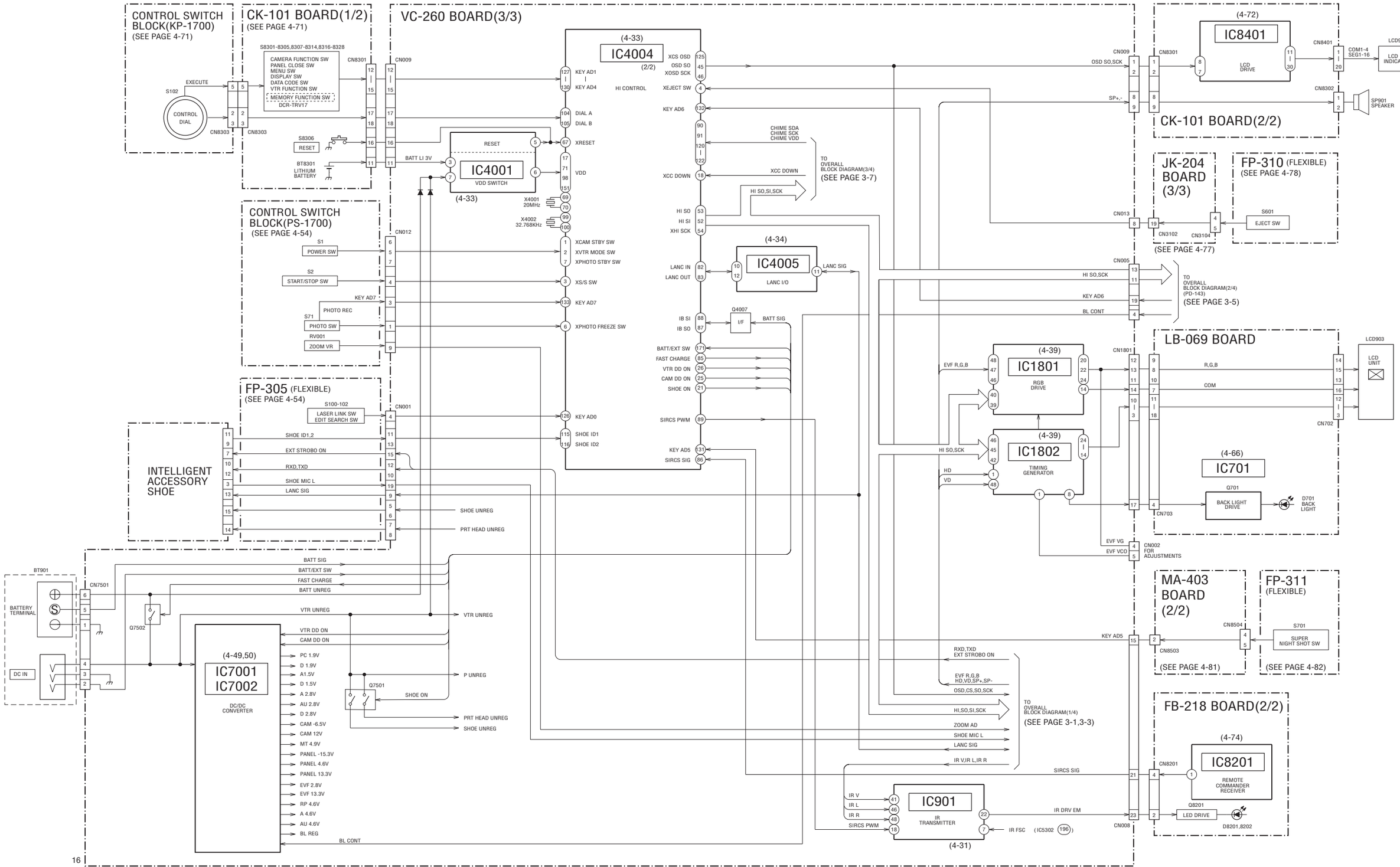
3-4. OVERALL BLOCK DIAGRAM (3/4)

( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.



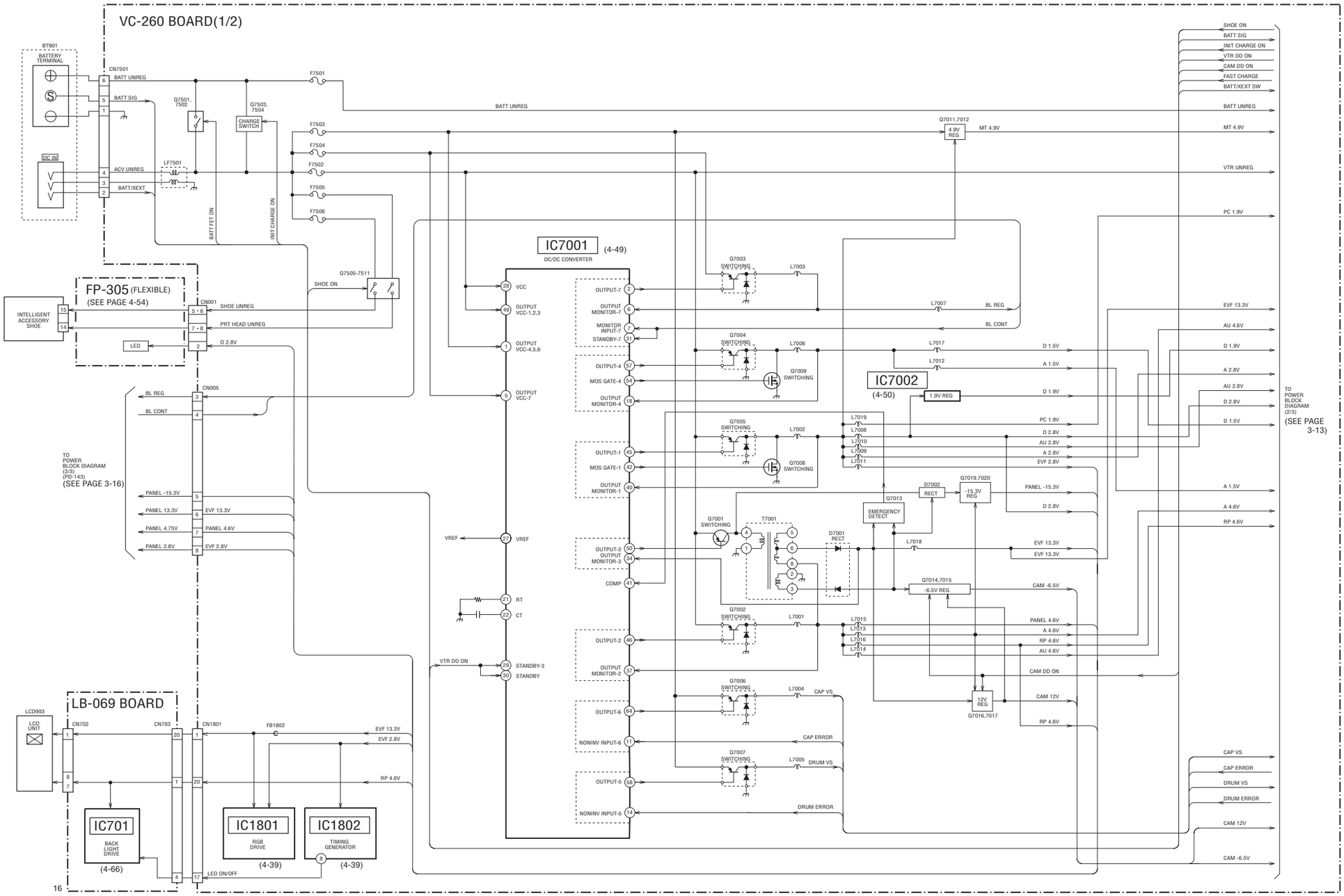
3-5. OVERALL BLOCK DIAGRAM (4/4)

( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.



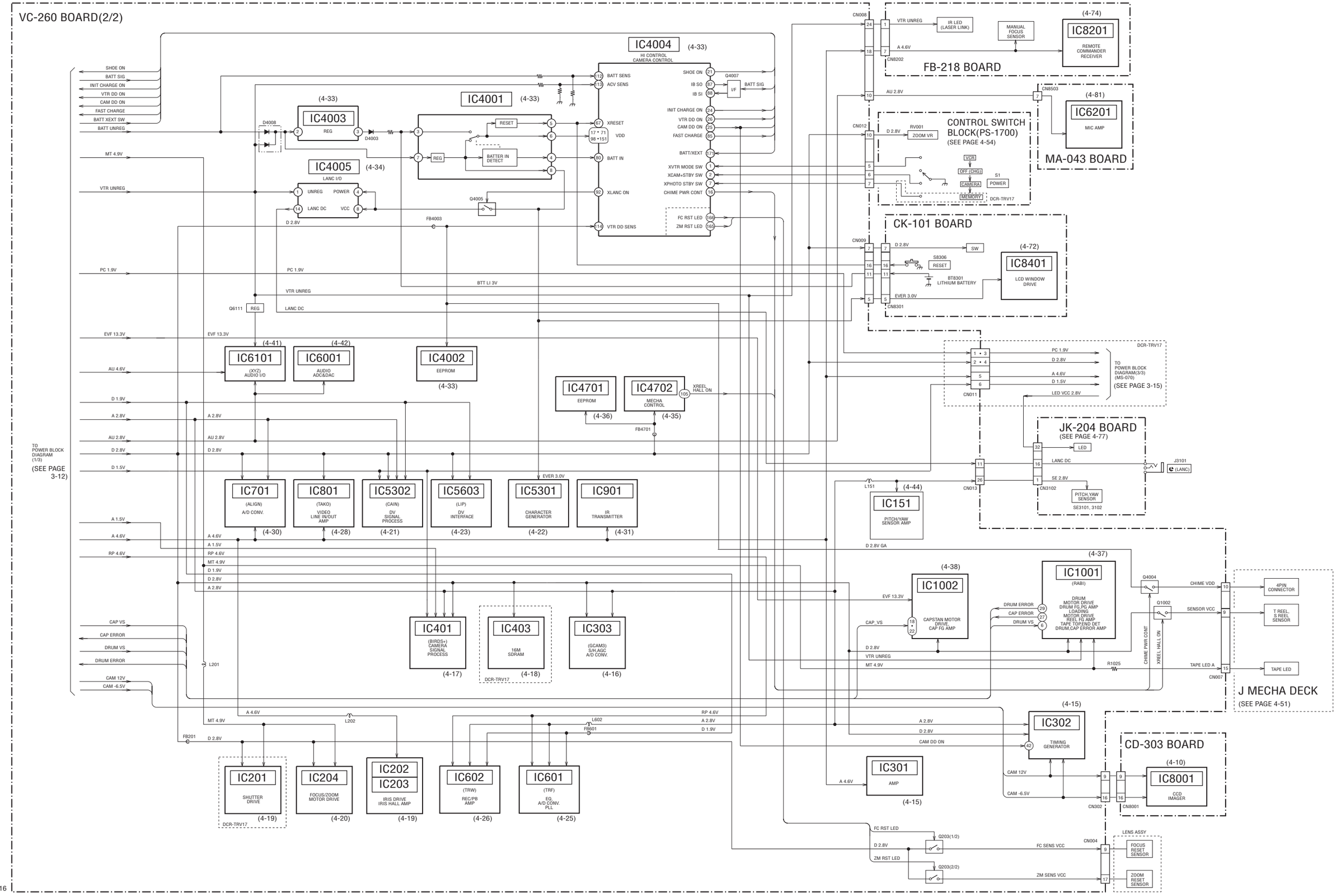
3-6. POWER BLOCK DIAGRAM (1/3)

( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.



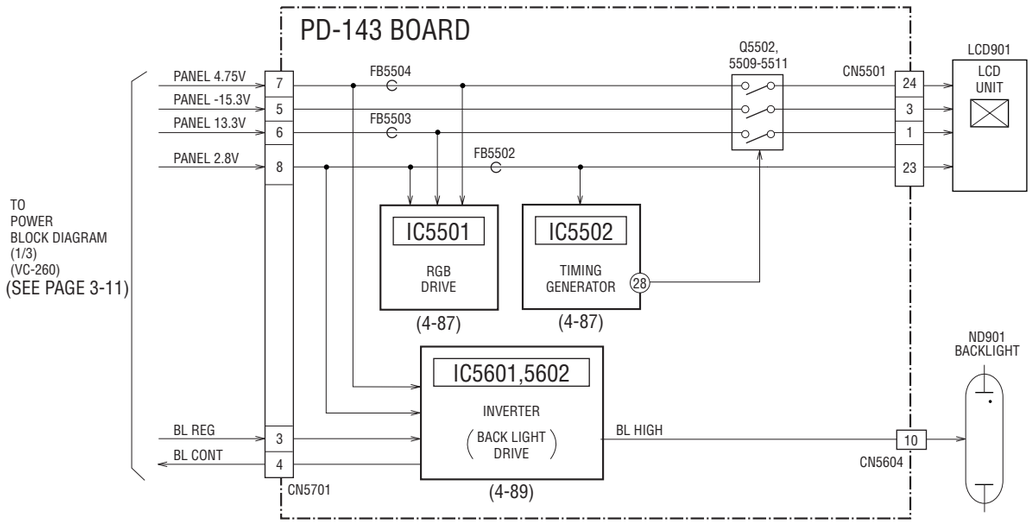
3-7. POWER BLOCK DIAGRAM (2/3)

( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.



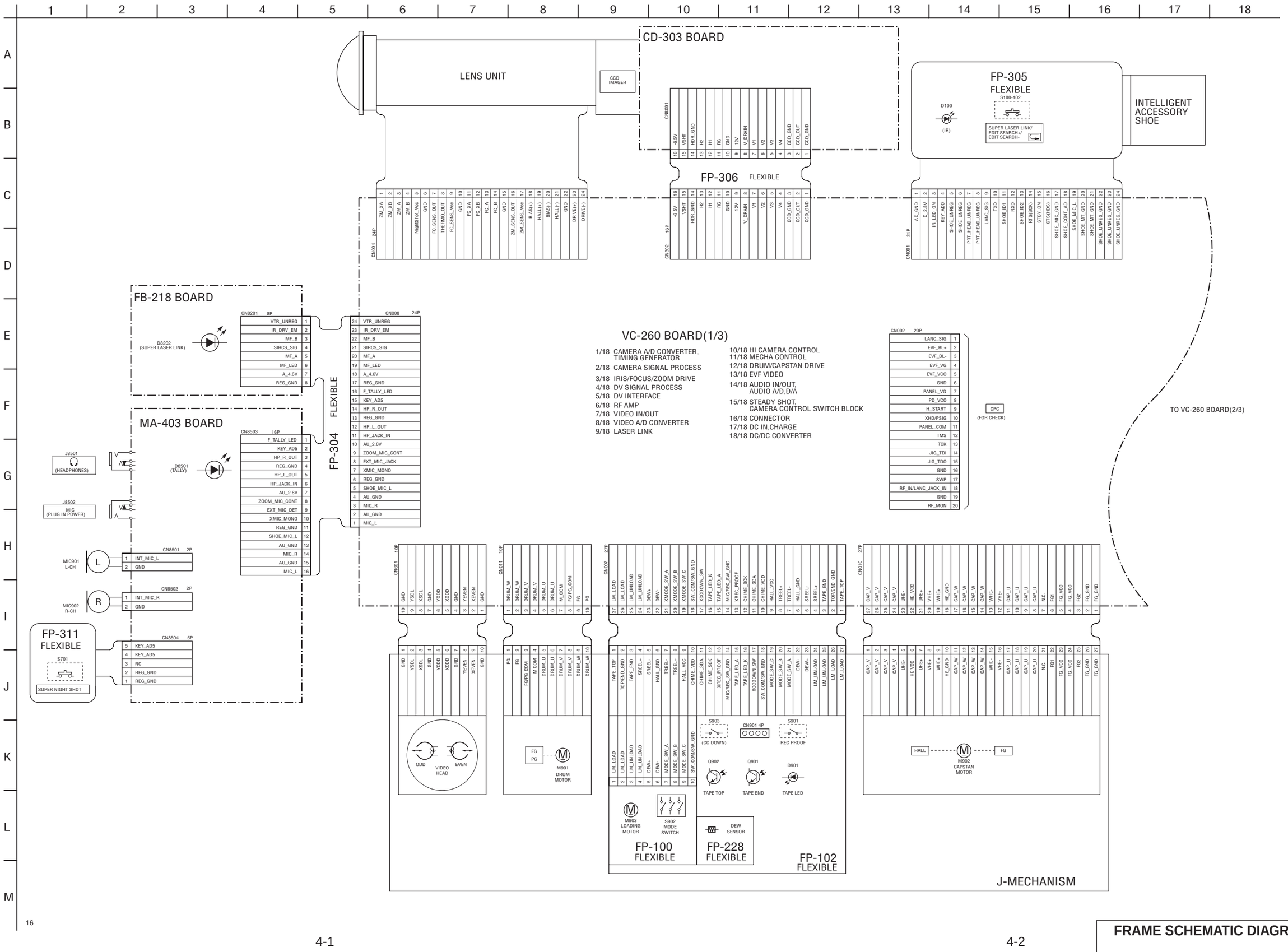
3-8. POWER BLOCK DIAGRAM (3/3)

( ) : Page No. shown in ( ) indicates the page to refer on the schematic diagram.

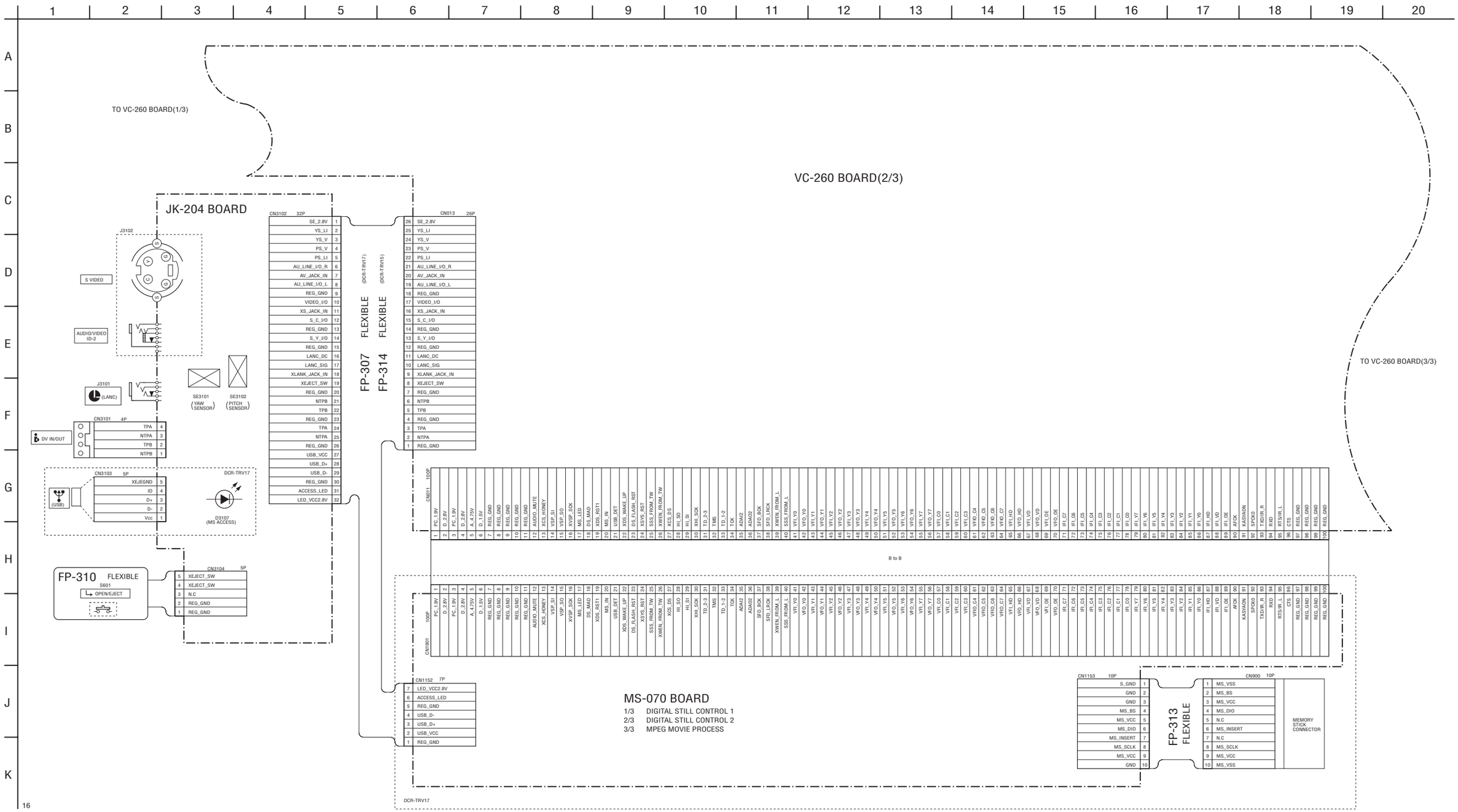


SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

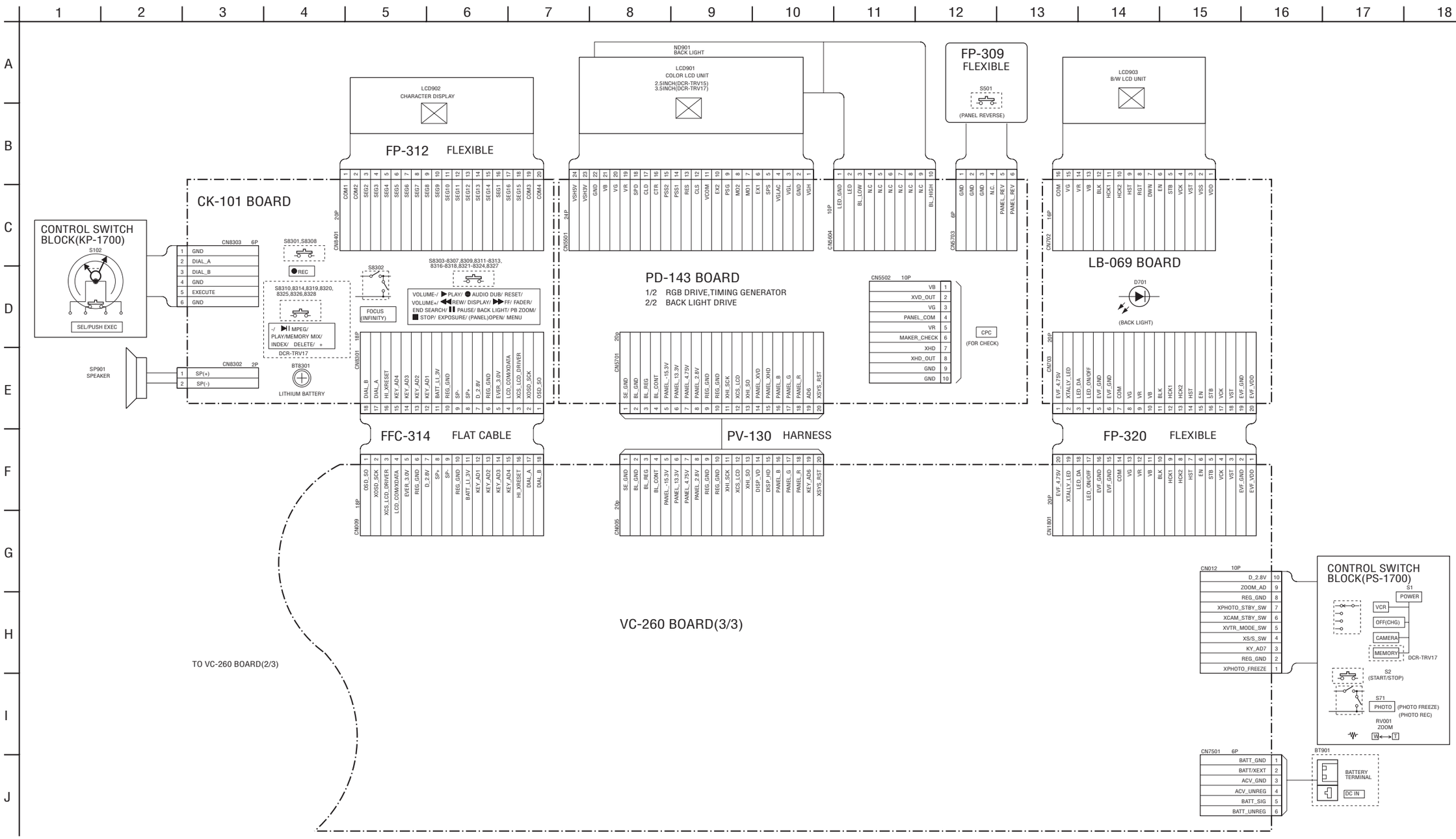
4-1. FRAME SCHEMATIC DIAGRAM (1/3)



FRAME SCHEMATIC DIAGRAM (2/3)



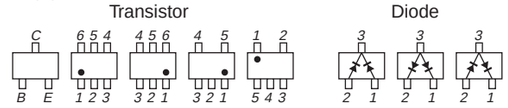
FRAME SCHEMATIC DIAGRAM (3/3)



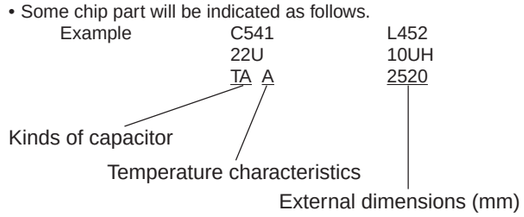
4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR WIRING BOARDS AND SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For printed wiring boards)
- ▒▒▒: Pattern from the side which enables seeing.
  (The other layers' patterns are not indicated.)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are few cases that the part printed on diagram isn't mounted in this model.
- Chip parts.



(For schematic diagrams)
- All capacitors are in μF unless otherwise noted. pF : μμF. 50V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10W unless otherwise noted.
  kΩ=1000Ω, MW=1000kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.



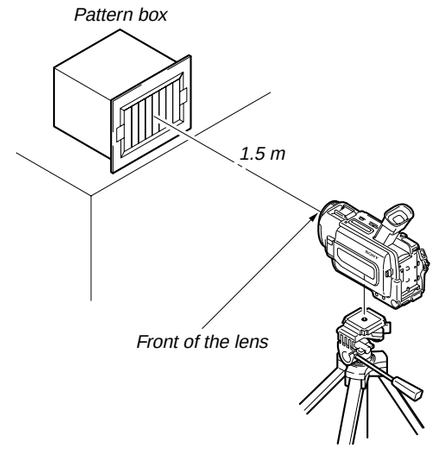
- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
  In such cases, the unused circuits may be indicated.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- : non flammable resistor
- : fusible resistor
- : panel designation
- : B+ Line *
- : B– Line *
- : IN/OUT direction of (+,–) B LINE. *
- : adjustment for repair. *
- Circled numbers refer to waveforms. *

* Indicated by the color red.

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

(Measuring conditions voltage and waveform)
- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms. *
  (VOM of DC 10 MΩ input impedance is used.).
- Voltage values change depending upon input impedance of VOM used.) *

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

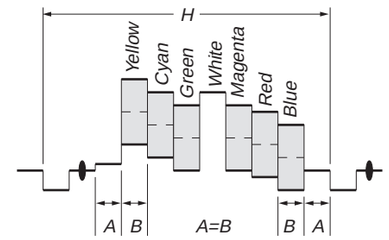


Fig. a (Video output terminal output waveform)

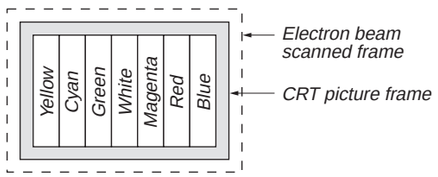


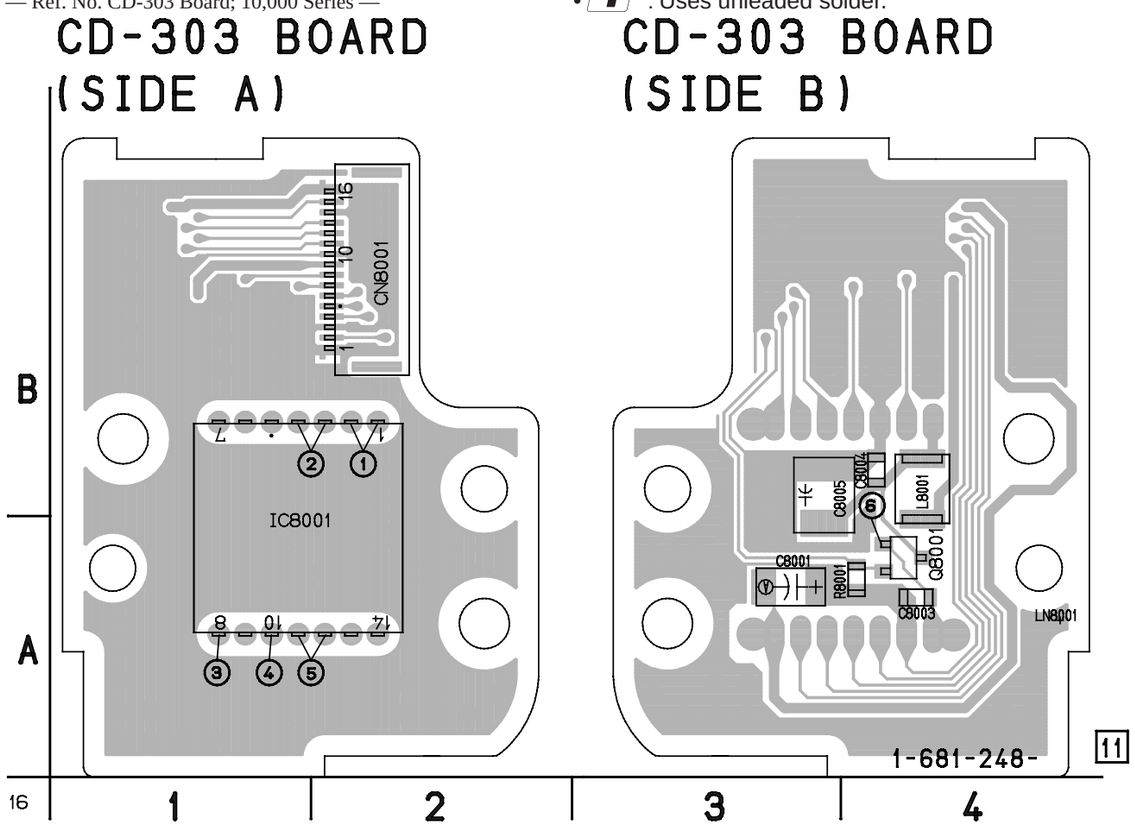
Fig.b (Picture on monitor TV)

When indicating parts by reference number, pleas include the board name.

CD-303 (CCD IMAGER) PRINTED WIRING BOARD

— Ref. No. CD-303 Board; 10,000 Series —

• : Uses unleaded solder.

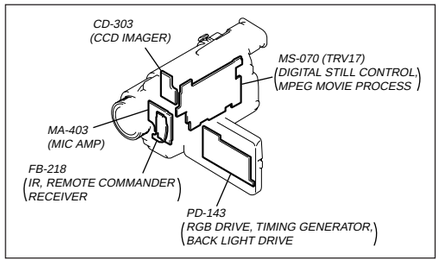


For printed wiring board

- Refer to page 4-97 for parts location.
- This board is the double-sided board.
- Chip parts

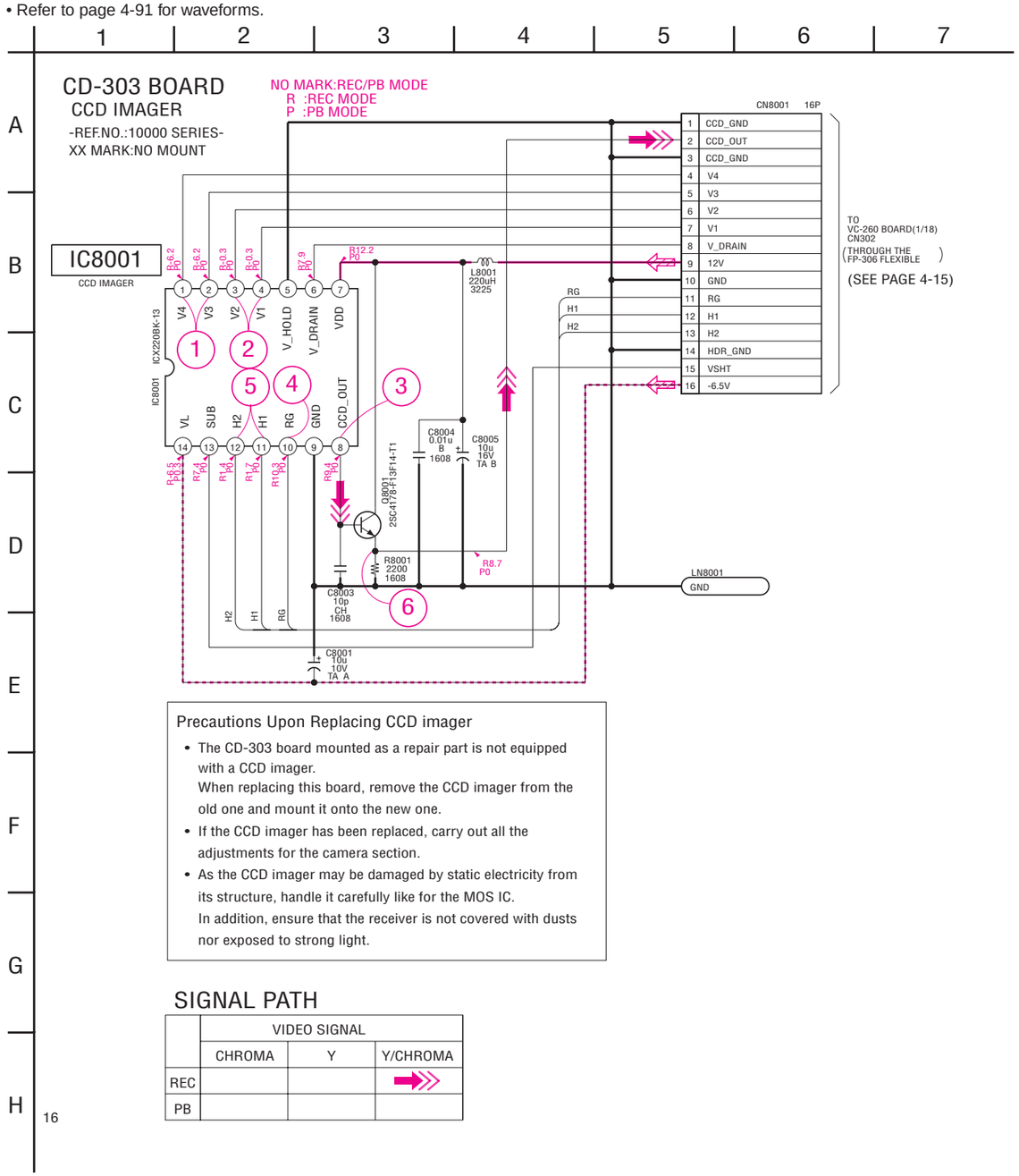
Transistor

There are a few cases that the part printed on this diagram isn't mounted in this model.



For Schematic Diagram

• Refer to page 4-91 for waveforms.



Precautions Upon Replacing CCD imager

- The CD-303 board mounted as a repair part is not equipped with a CCD imager.
  When replacing this board, remove the CCD imager from the old one and mount it onto the new one.
- If the CCD imager has been replaced, carry out all the adjustments for the camera section.
- As the CCD imager may be damaged by static electricity from its structure, handle it carefully like for the MOS IC.
  In addition, ensure that the receiver is not covered with dusts nor exposed to strong light.

SIGNAL PATH

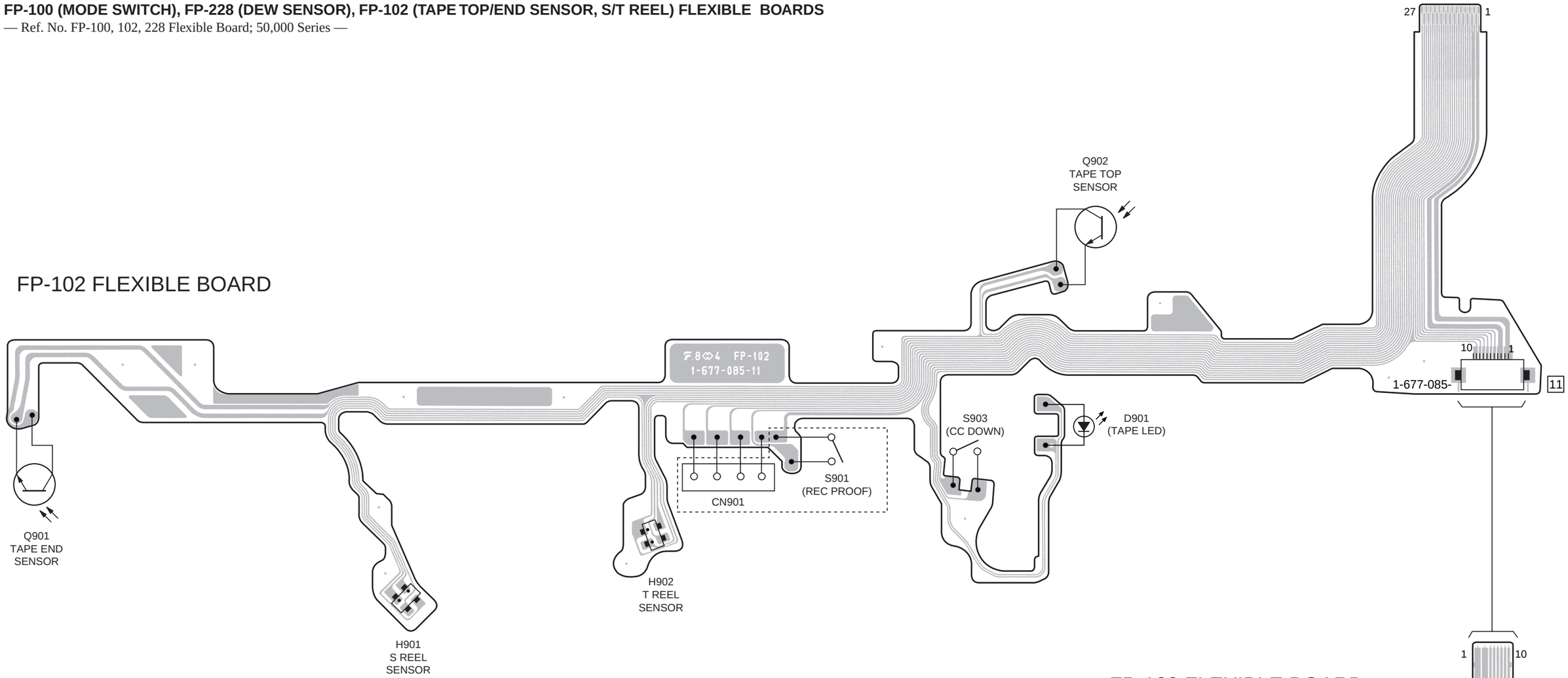
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			⇉
PB			

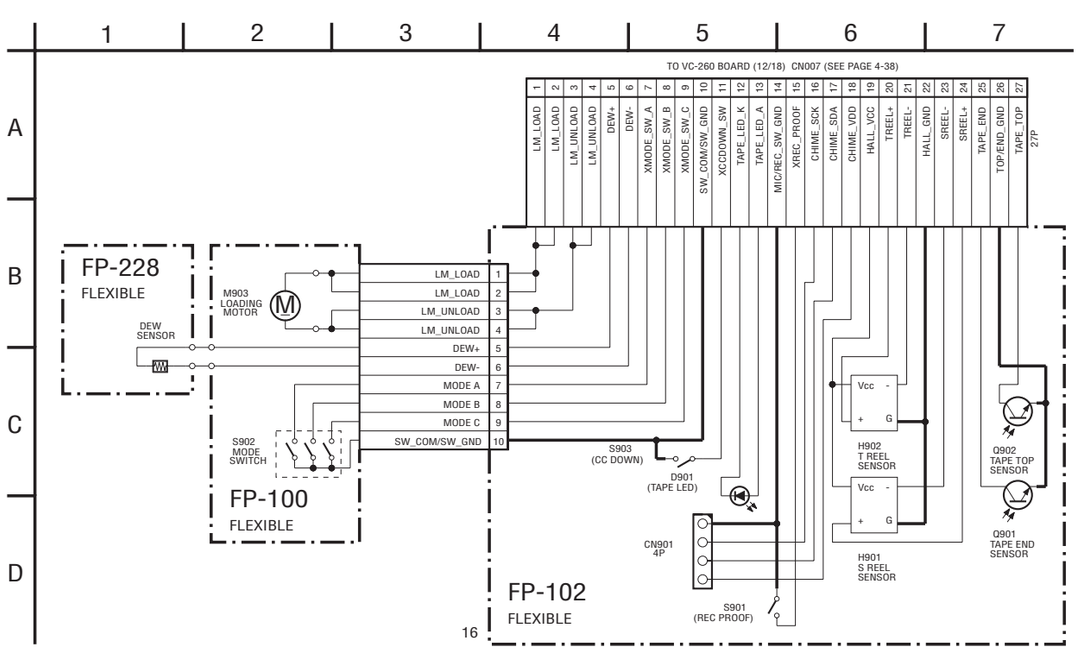
Schematic diagram and printed wiring board of the VC-260 board are not shown.
Pages from 4-11 to 4-50 are not shown.

FP-100 (MODE SWITCH), FP-228 (DEW SENSOR), FP-102 (TAPE TOP/END SENSOR, S/T REEL) FLEXIBLE BOARDS

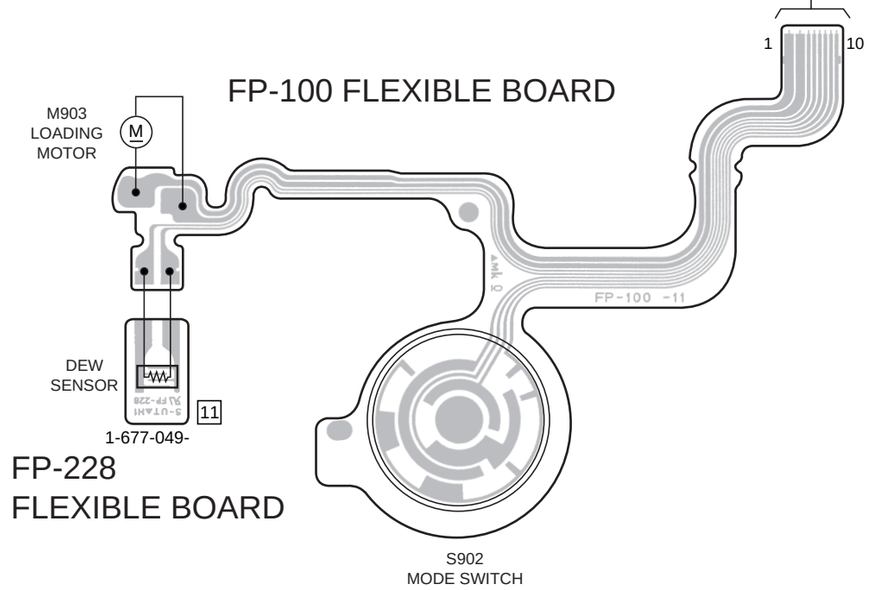
— Ref. No. FP-100, 102, 228 Flexible Board; 50,000 Series —

FP-102 FLEXIBLE BOARD





FP-100 FLEXIBLE BOARD



FP-228 FLEXIBLE BOARD

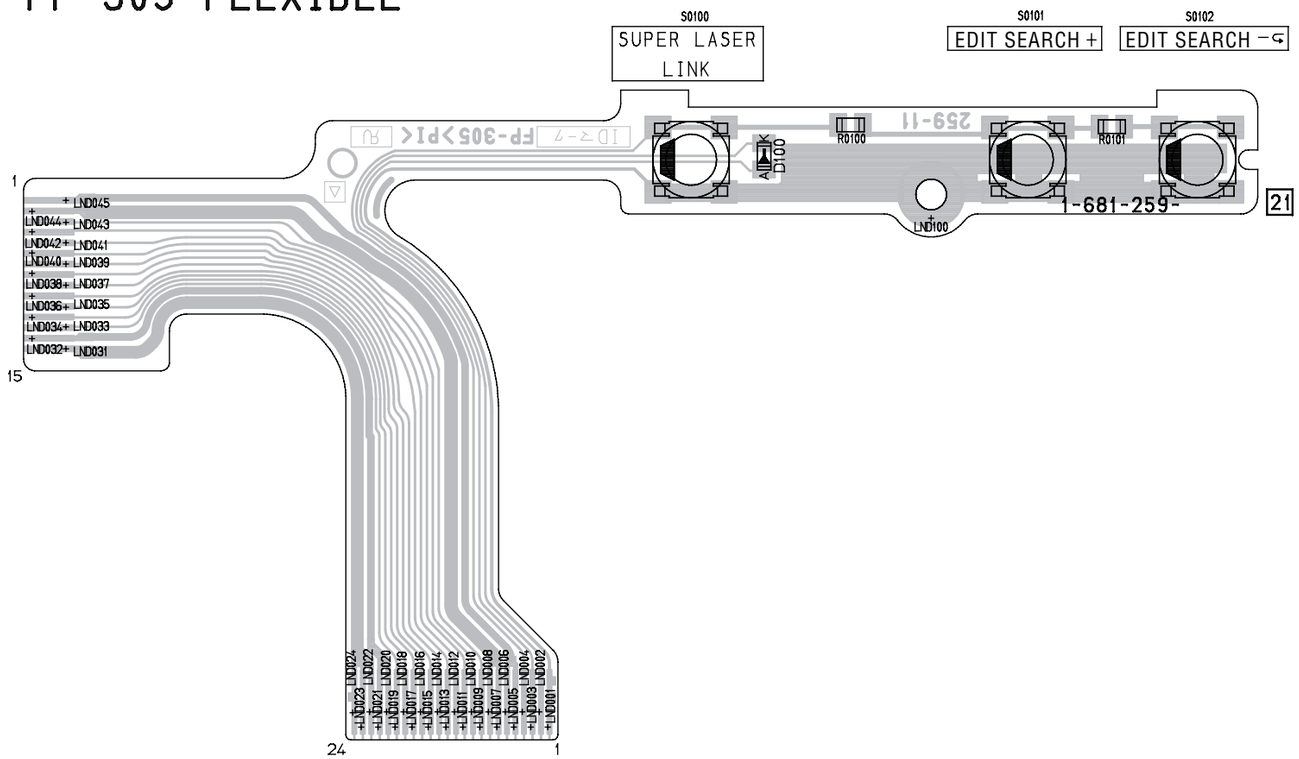
MODE SWITCH, DEW SENSOR / **TAPE TOP/END SENSOR, S/T REEL**

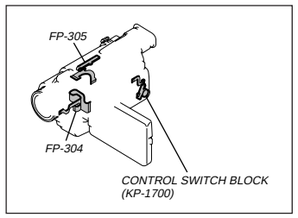
FP-100, FP-228 **FP-102**

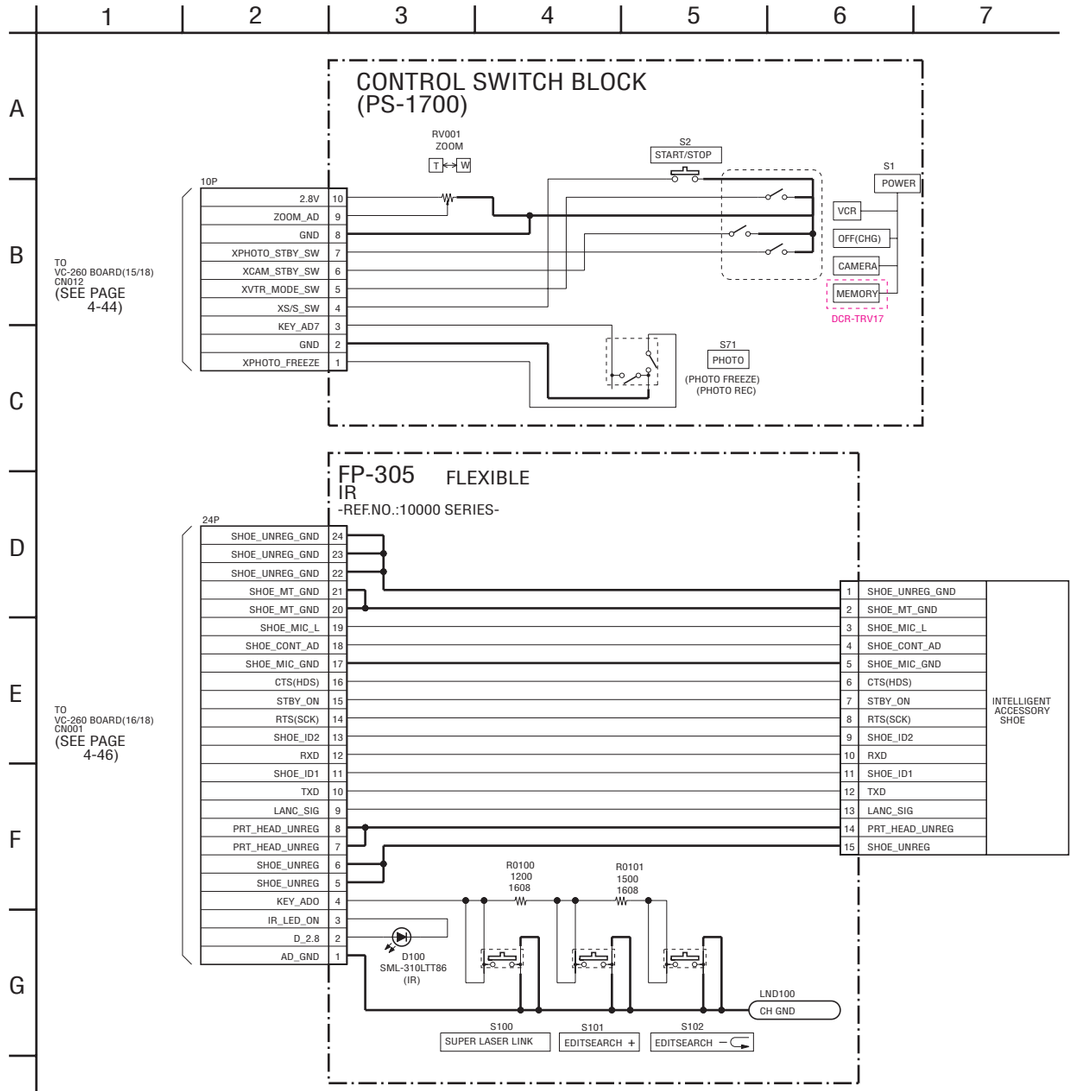
FP-305 (IR) PRINTED WIRING BOARD

— Ref. No. FP-305 Board; 10,000 Series —

FP-305 FLEXIBLE



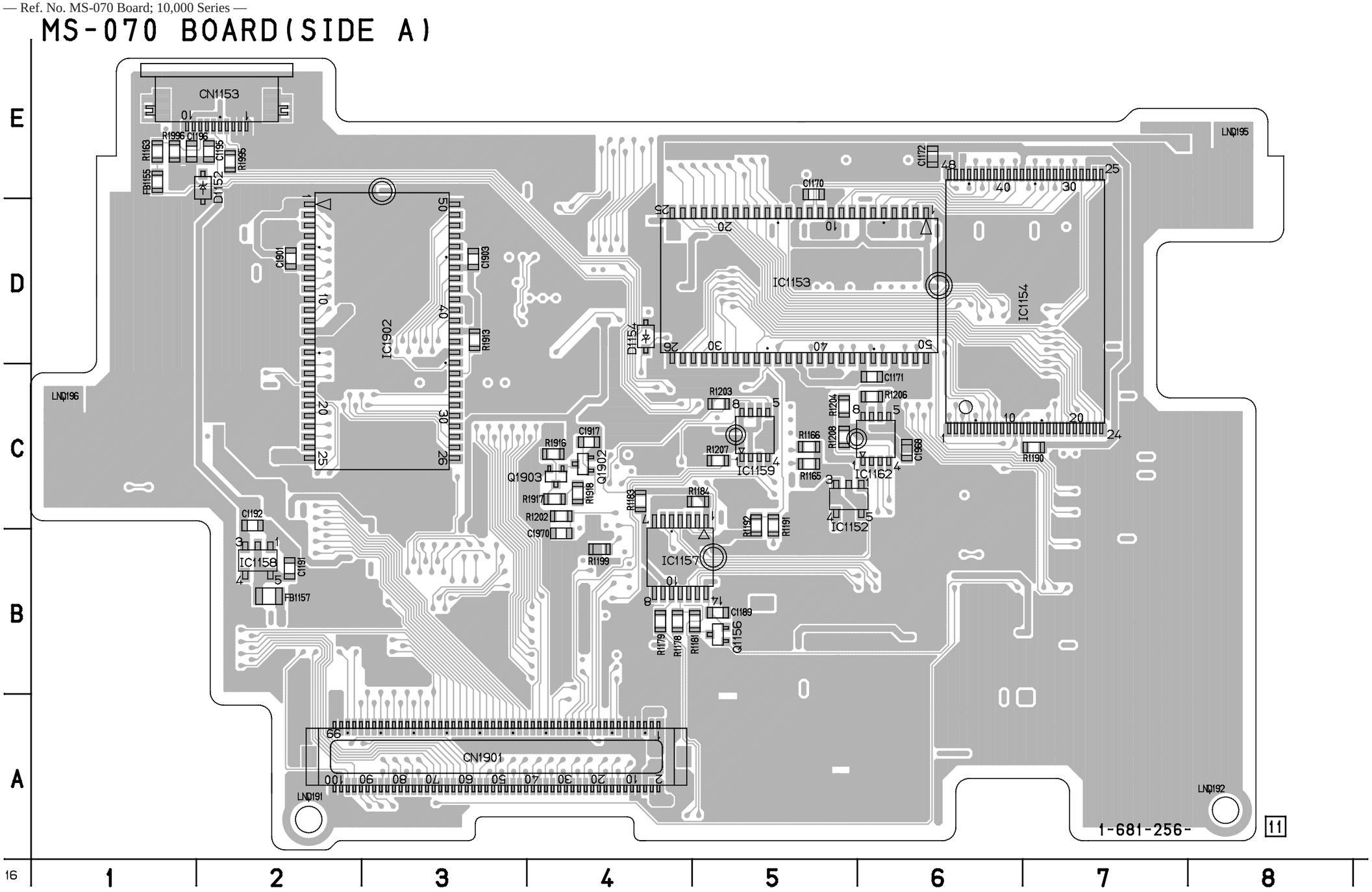




CONTROL SWITCH BLOCK(PS-1700)is replaced as a block.
So that this PRINTED WIRING BOARD is omitted.

MS-070 (DIGITAL STILL CONTROL, MPEG MOVIE PROCESS) PRINTED WIRING BOARD

— Ref. No. MS-070 Board; 10,000 Series —

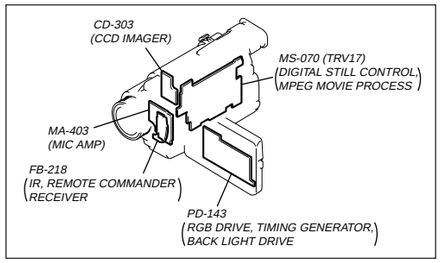


For printed wiring board

- Refer to page 4-97 for parts location.
- This board consists of multiple layers. However, only the sides (layers) A and B are shown.
- Chip parts

Transistor

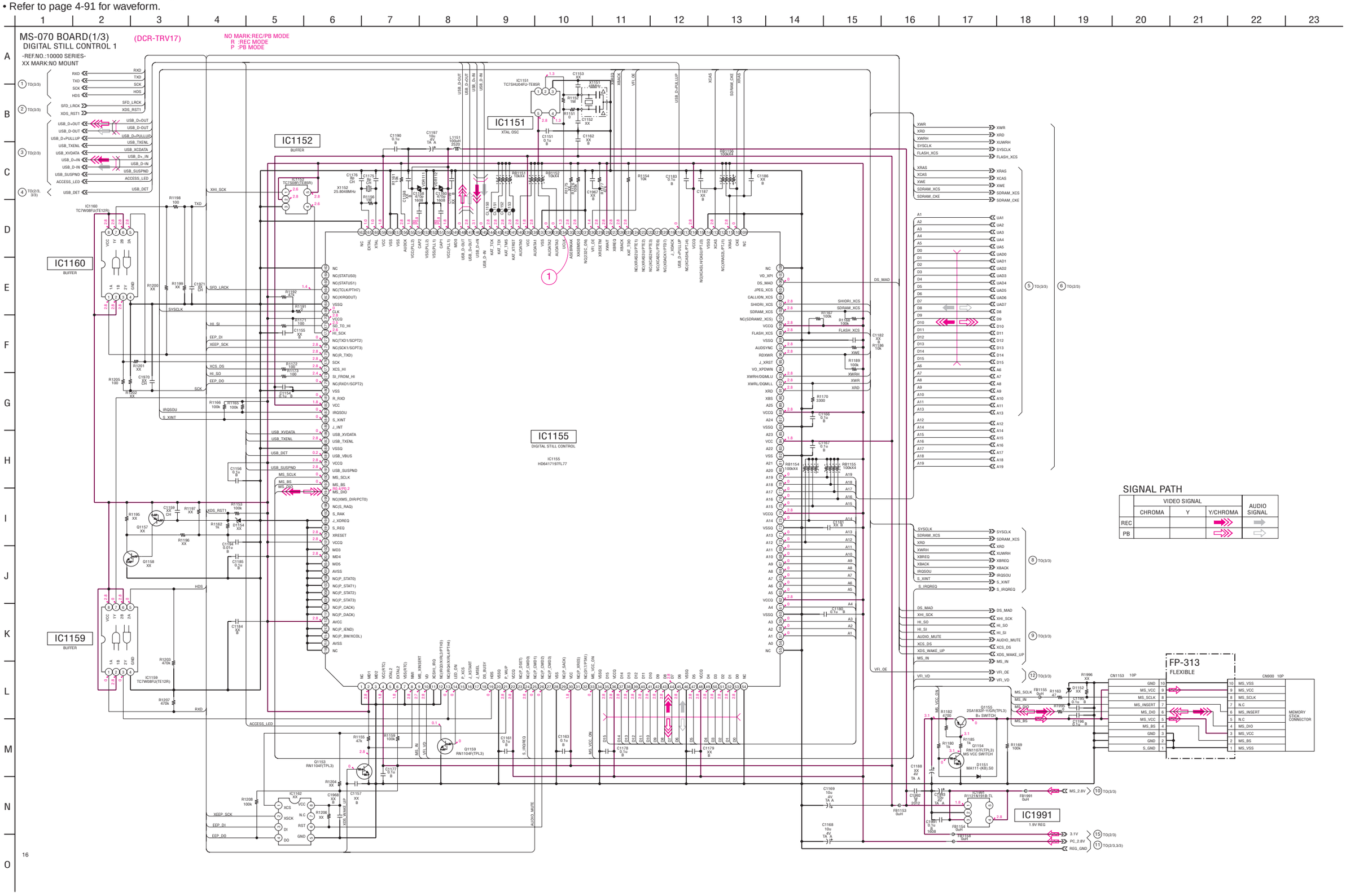
There are a few cases that the part printed on this diagram isn't mounted in this model.



MS-070 BOARD(SIDE B)

For Schematic Diagram

- Refer to page 4-55 for printed wiring board.
- Refer to page 4-91 for waveform.



For Schematic Diagram

• Refer to page 4-55 for printed wiring board.

MS-070 BOARD(2/3) (DCR-TRV17)

DIGITAL STILL CONTROL 2

-REF.NO.:10000 SERIES-

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

R :REC MODE

P :PB MODE

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB				

IC1902 16Mbit SDRAM

IC1902 NT56V1616A 0T-7-T&R

IC1153 16Mbit SDRAM

IC1154 4Mbit FLASH MEMORY

IC1154 MBM29LV400BC-90PFTN-S117-ER

IC1157 USB I/F

IC1157 ML60820TAZ060

IC1158 3.1V REG

IC1158 RN5RZ231BA-TL

IC1156 XX

CN1152 7P

1	REG_GND
2	USB_VCC
3	USB_D+
4	USB_D-
5	REG_GND
6	ACCESS_LED
7	LED_VCC2.8V

TO JK-204 BOARD CN3102(PIN 26 TO PIN 32) (THROUGH THE FP-307 FLEXIBLE) (SEE PAGE 4-78)

DIGITAL STILL CONTROL 2

MS-070 (2/3)

For Schematic Diagram

• Refer to page 4-55 for printed wiring board.

MS-070 BOARD(3/3)
MPEG MOVIE PROCESS
(DCR-TRV17)

-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

TO VC-260 BOARD(16/18) CN011
(SEE PAGE 4-46)

IC1901
MPEG MOVIE PROCESS

IC1901
M88TJ4760PFF-G-BND

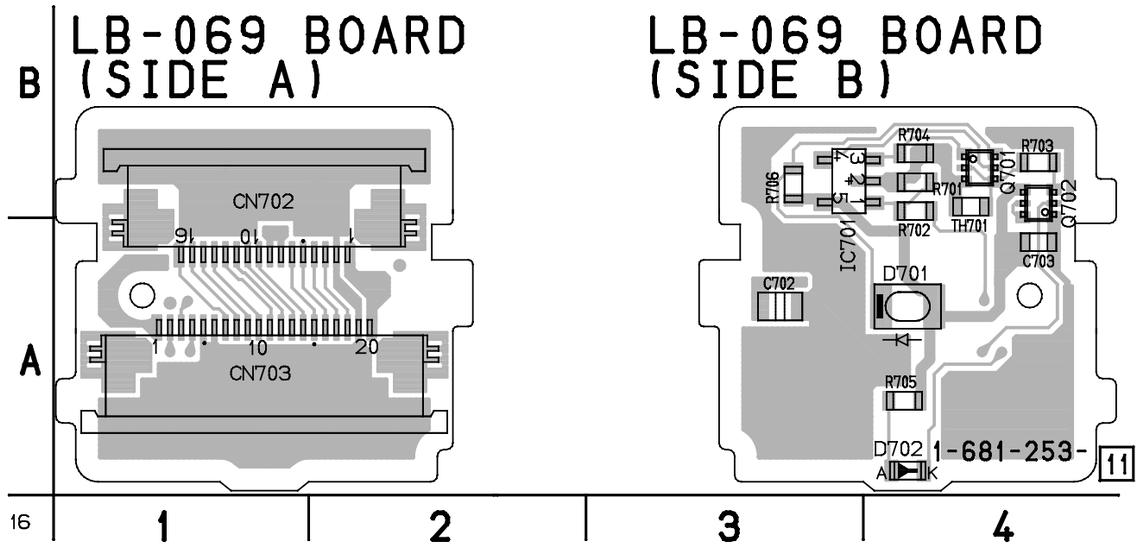
SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	⇨

LB-069 (EVF, BACK LIGHT) PRINTED WIRING BOARD

— Ref. No. LB-069 Board; 10,000 Series —

• : Uses unleaded solder.

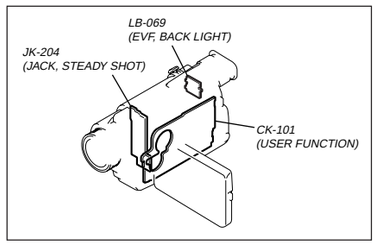


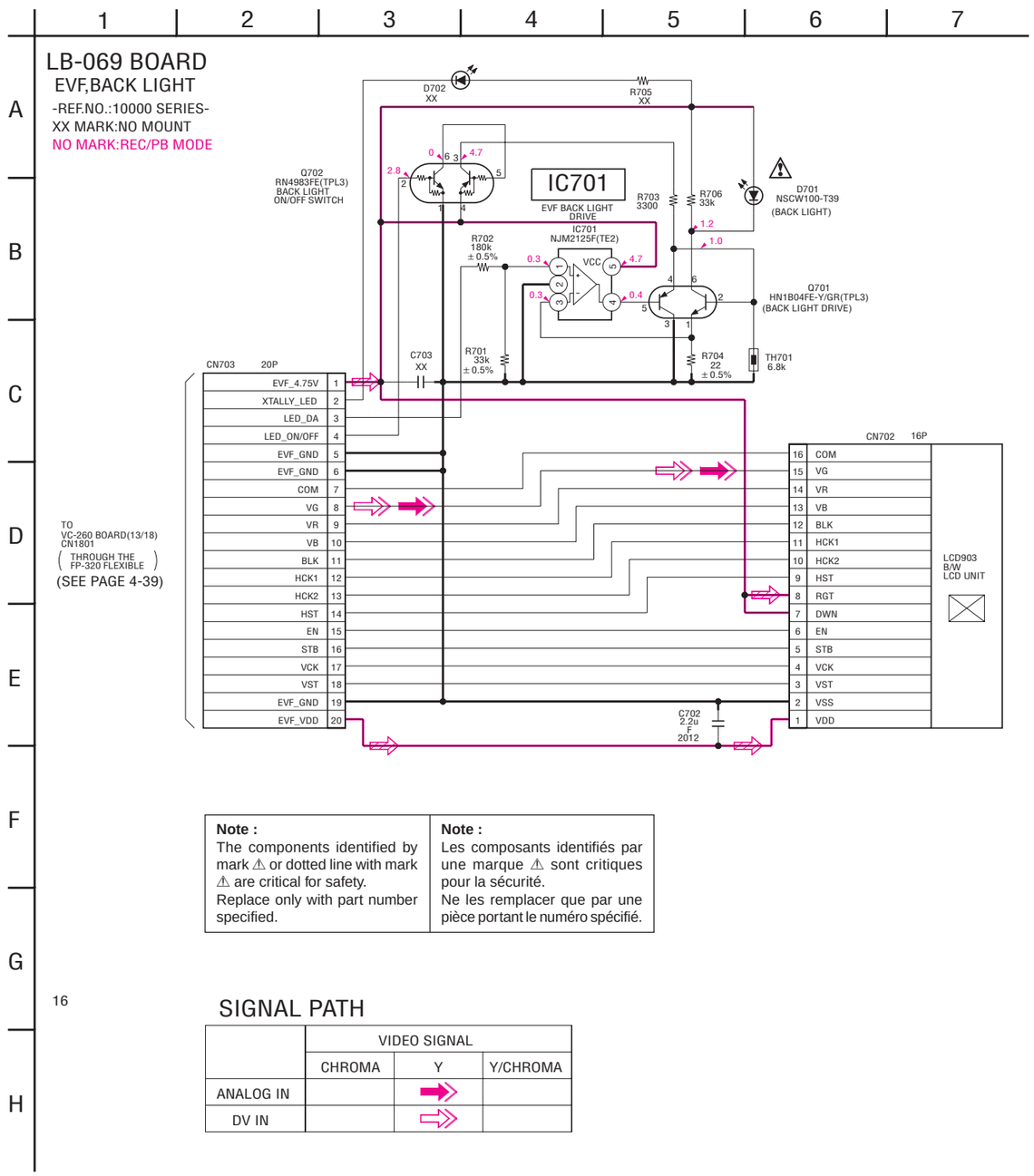
For printed wiring board

- Refer to page 4-97 for parts location.
- This board is the double-sided board.
- Chip parts

Transistor

There are a few cases that the part printed on this diagram isn't mounted in this model.





Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

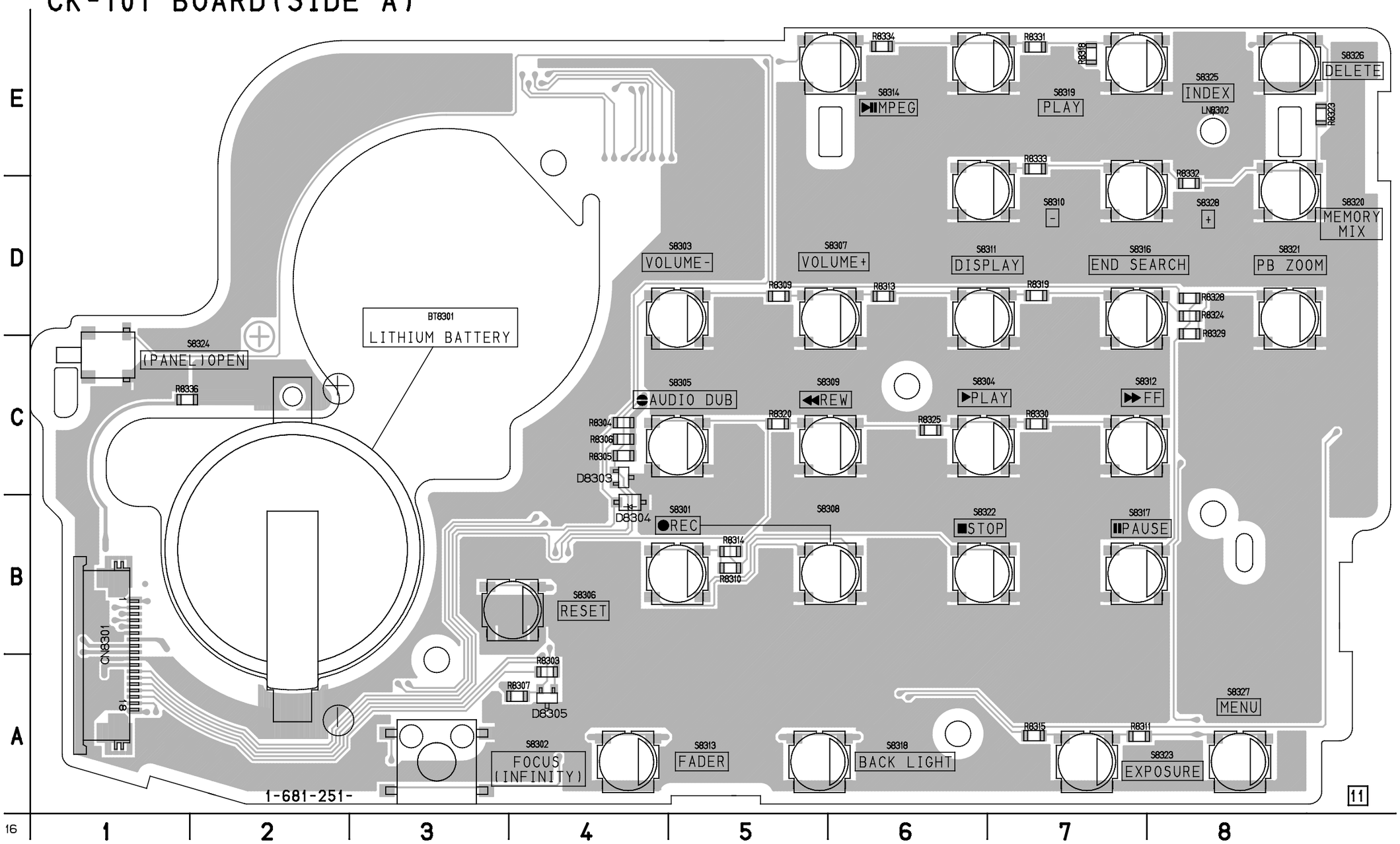
SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
ANALOG IN		➡	
DV IN		⇨	

CK-101 (USER FUNCTION) PRINTED WIRING BOARD

— Ref. No. CK-101 Board; 10,000 Series —

• : Uses unleaded solder.

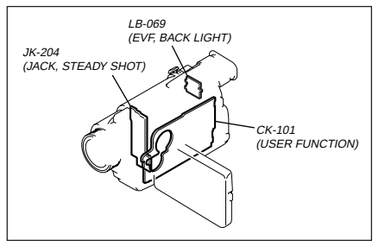


For printed wiring board

- Refer to page 4-97 for parts location.
- This board is the double-sided board.
- Chip parts

Diode

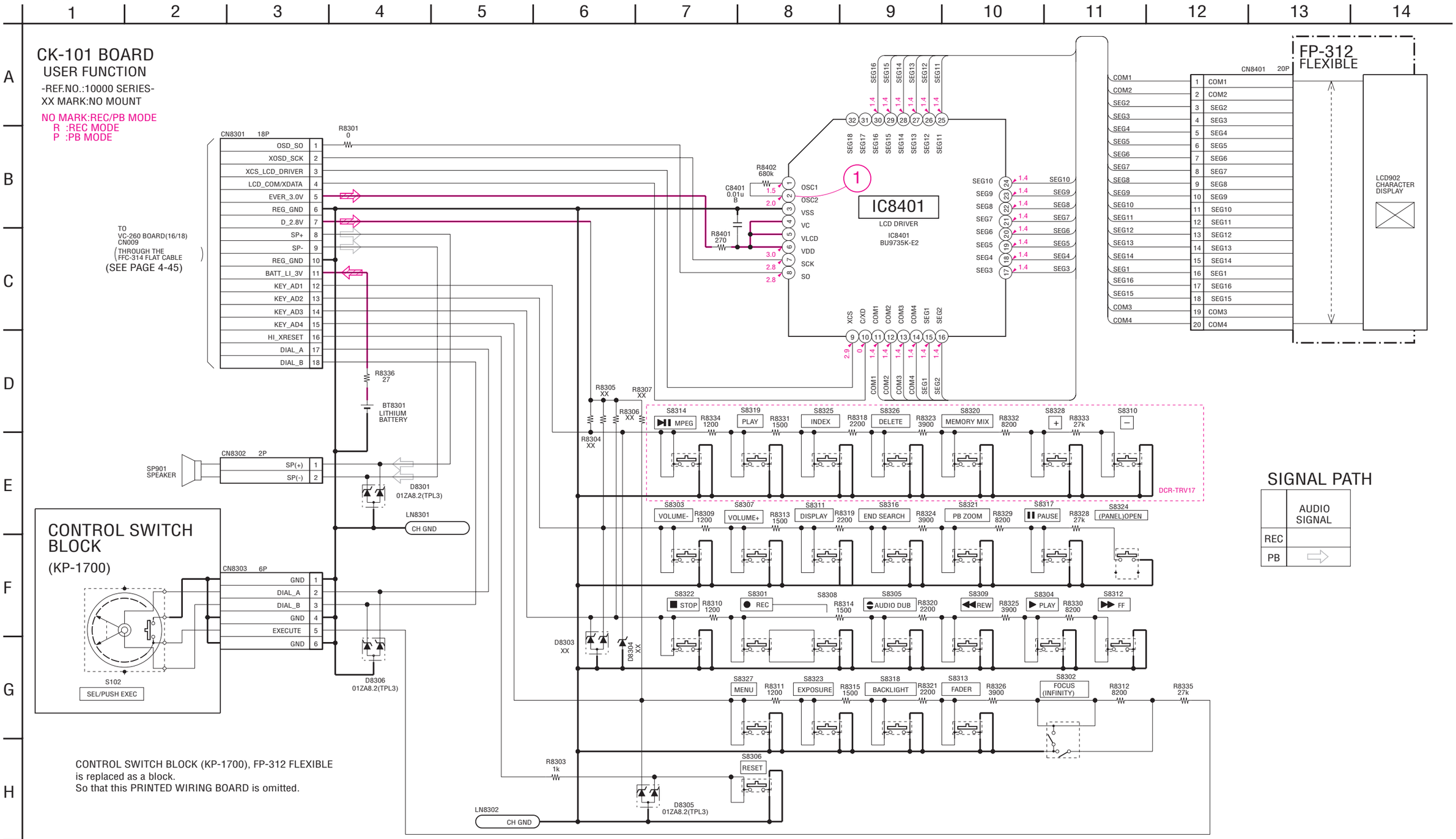
There are a few cases that the part printed on this diagram isn't mounted in this model.



• LF : Uses unleaded solder.

CK-101 BOARD(SIDE B)

For Schematic Diagram
- Refer to page 4-67 for printed wiring board.
- Refer to page 4-91 for waveform.



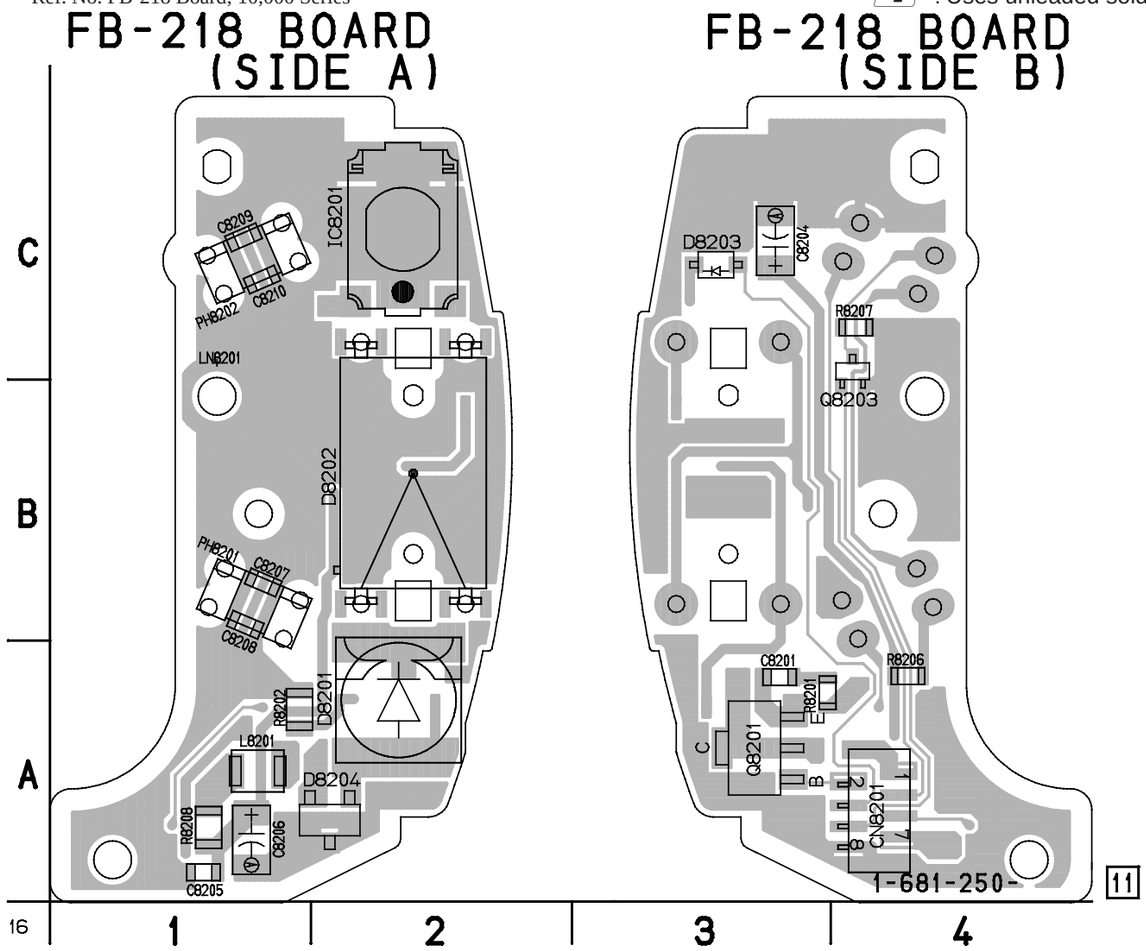
CONTROL SWITCH BLOCK (KP-1700), FP-312 FLEXIBLE is replaced as a block.
So that this PRINTED WIRING BOARD is omitted.

16

FB-218 (IR, REMOTE COMMANDER RECEIVER) PRINTED WIRING BOARD

— Ref. No. FB-218 Board; 10,000 Series —

• : Uses unleaded solder.



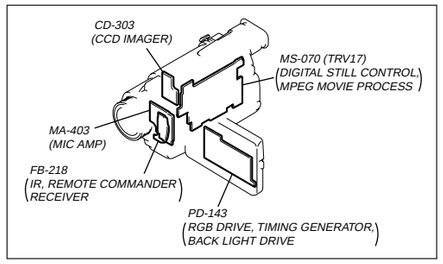
For printed wiring board

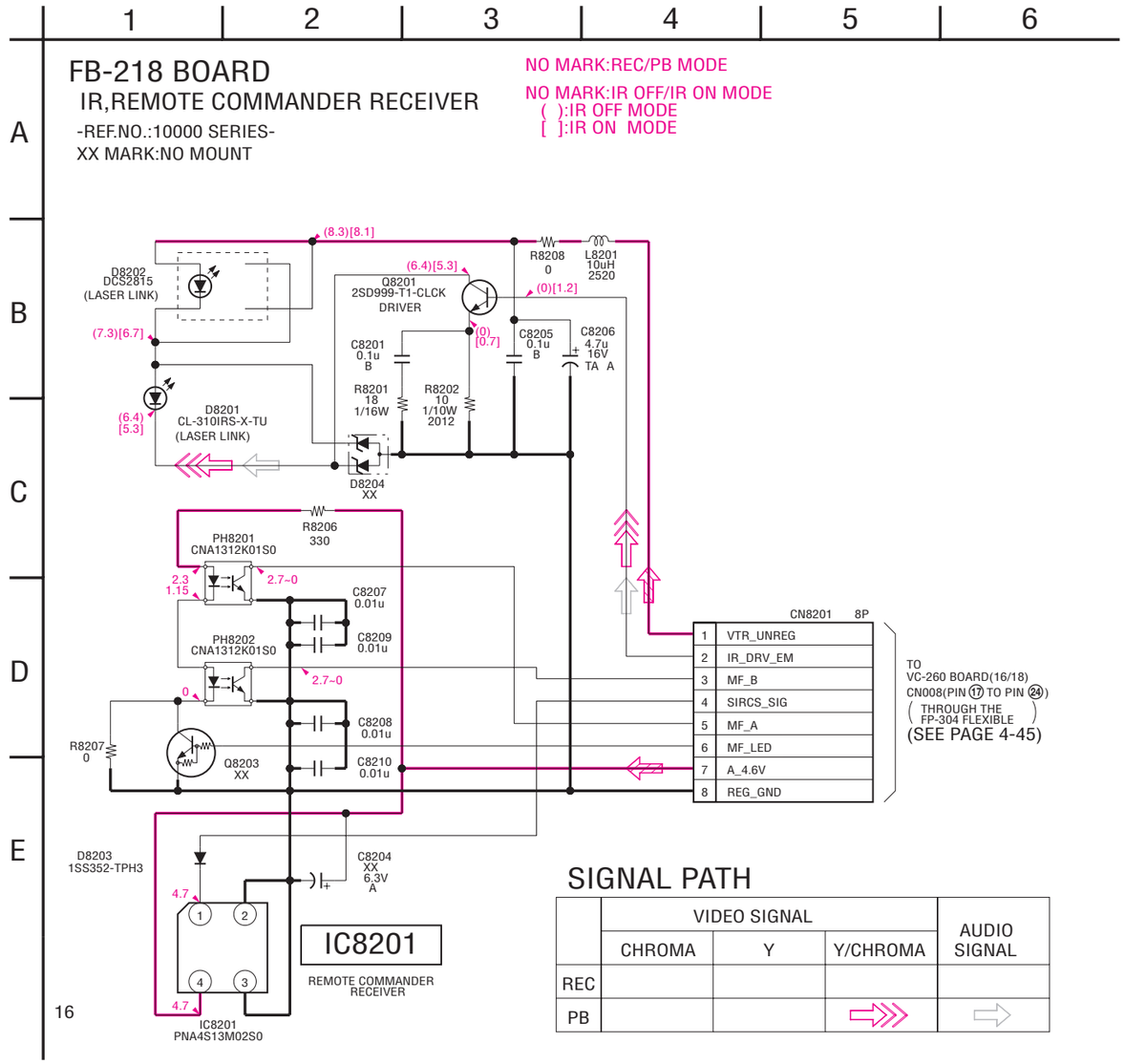
- Refer to page 4-98 for parts location.
- This board is the double-sided board.
- Chip parts

Transistor

Diode

There are a few cases that the part printed on this diagram isn't mounted in this model.





IC8201

REMOTE COMMANDER RECEIVER

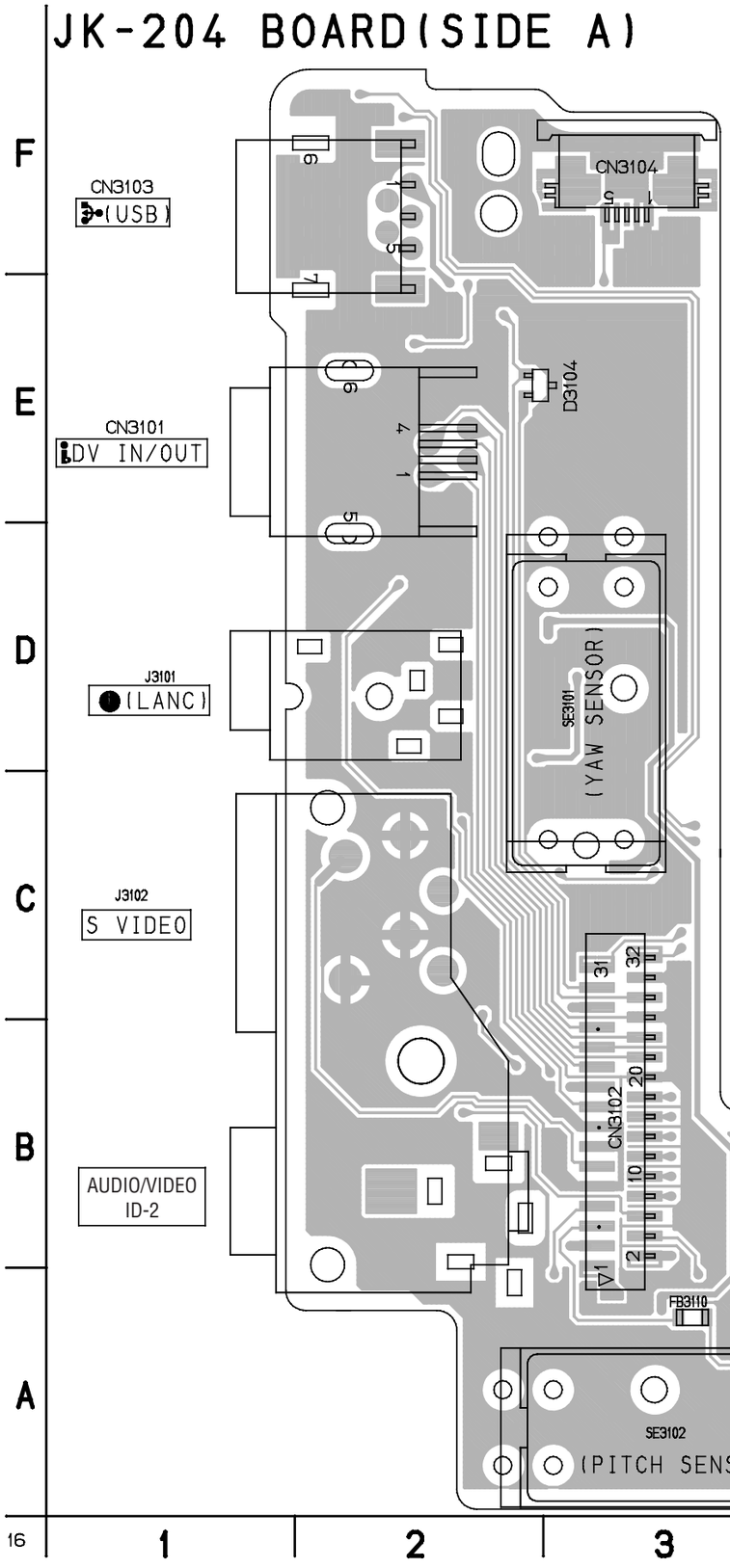
SIGNAL PATH

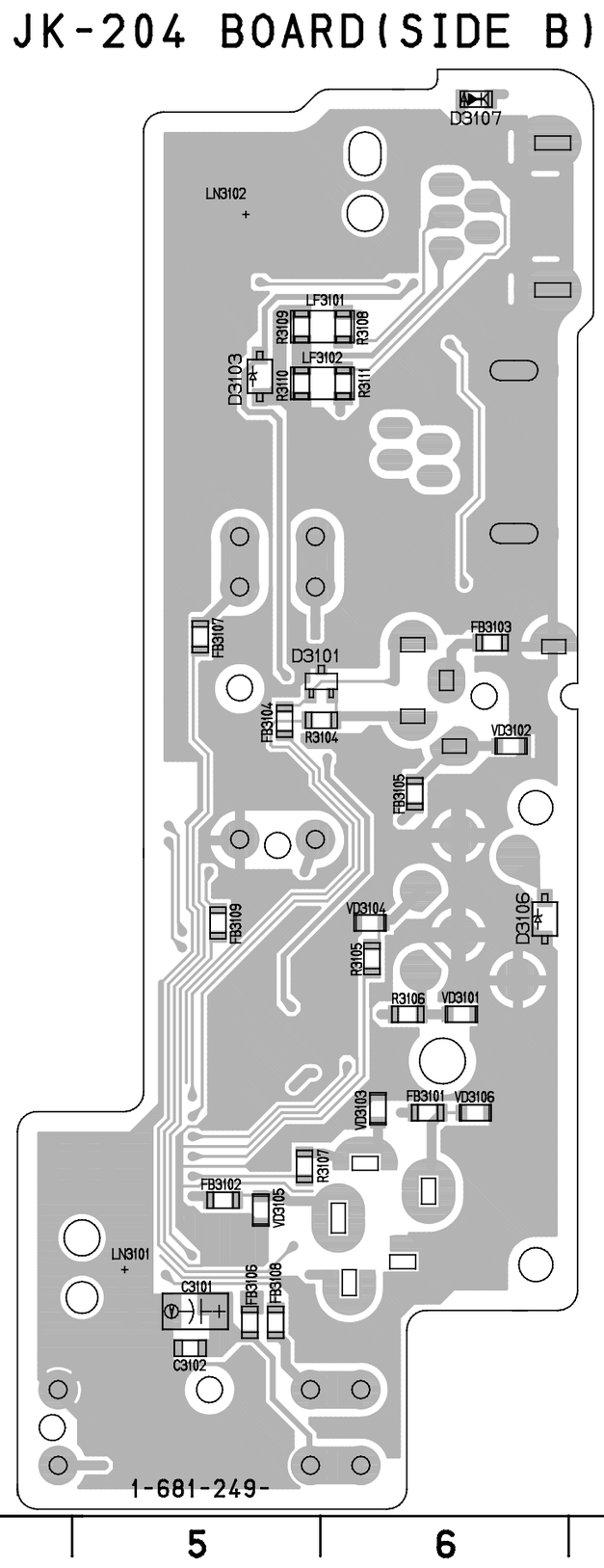
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB			⇛	⇨

JK-204 (JACK, STEADY SHOT) PRINTED WIRING BOARD

— Ref. No. JK-204 Board; 10,000 Series —

• : Uses unleaded solder.



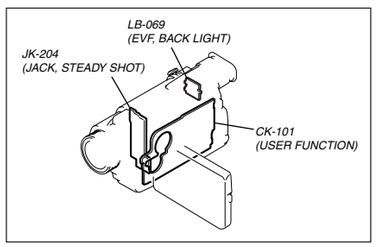


For printed wiring board

- Refer to page 4-98 for parts location.
- This board is the double-sided board.
- Chip parts

Diode

There are a few cases that the part printed on this diagram isn't mounted in this model.



JACK, STEADY SHOT
JK-204

For Schematic Diagram
• Refer to page 4-75 for printed wiring board of JK-204 board.
• Refer to page 4-84 for printed wiring board of FP-310 flexible.

JK-204 BOARD
JACK,STEADY SHOT
-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT

J3102
S VIDEO
AUDIO/VIDEO ID-2
VD3101 VD3104
D3106 UDZS-TE17-8.2B
R3105 0
R3106 0
FB3101 0uH 1608
FB3102 0uH 1608
R3107 0 1608
VD3103 VD3105 VD3106
LN3101 CH_GND
J3101 (LANC)
FB3103 0uH
FB3104 0uH
FB3105 0uH
R3104 0
VD3102
D3101 01ZA8.2(TPL3)
CN3101 4P
DV IN/OUT
TPA 4
NTPA 3
TPB 2
NTPB 1
CN3103 5P
(USB)
USB
GND 5
ID 4
D+ 3
D- 2
VCC 1
R3108 0
LF3101 XX
R3109 0
R3110 0
LF3102 XX
R3111 0
D3104 01ZA8.2(TPL3)
D3103 UDZS-TE17-8.2B
LN3102 CH_GND
DCR-TRV17

SE3101 (YAW SENSOR)
SE3102 (PITCH SENSOR)
Vref1 2.8V LIA1
Vref2 2.8V LIA2
C3101 XX 6.3V TA A
C3102 XX
FB3107 0uH
FB3106 0uH
FB3109 0uH
FB3108 0uH
FB3110 0uH
D3107 SML-310LTT86 (MS ACCESS)

FP-310 FLEXIBLE
LND601
S601 OPEN/EJECT

CN3104 5P
1 REG_GND
2 REG_GND
3 N.C
4 XEJECT_SW
5 XEJECT_SW

CN3102 32P
1 SE_2.8V
2 YS_LI
3 YS_V
4 PS_V
5 PS_LI
6 AU_LINE/O_R
7 AV_JACK_IN
8 AU_LINE_I/O_L
9 REG_GND
10 VIDEO_I/O
11 XS_JACK_IN
12 S_C_I/O
13 REG_GND
14 S_Y_I/O
15 REG_GND
16 LANC_DC
17 LANC_SIG
18 XLANK_JACK_IN
19 XEJECT_SW
20 REG_GND
21 NTPB
22 TPB
23 REG_GND
24 TPA
25 NTPA
26 REG_GND
27 USB_VCC
28 USB_D+
29 USB_D-
30 REG_GND
31 ACCESS_LED
32 LED_VCC2.8V

TO VC-260 BOARD(15/18) CN013 (THOURGH THE FP-307 FLEXIBLE) (SEE PAGE 4-43)

TO MS-070 BOARD(2/3) (DCR-TRV17) CN1152 (THOURGH THE FP-307 FLEXIBLE) (SEE PAGE 4-62)

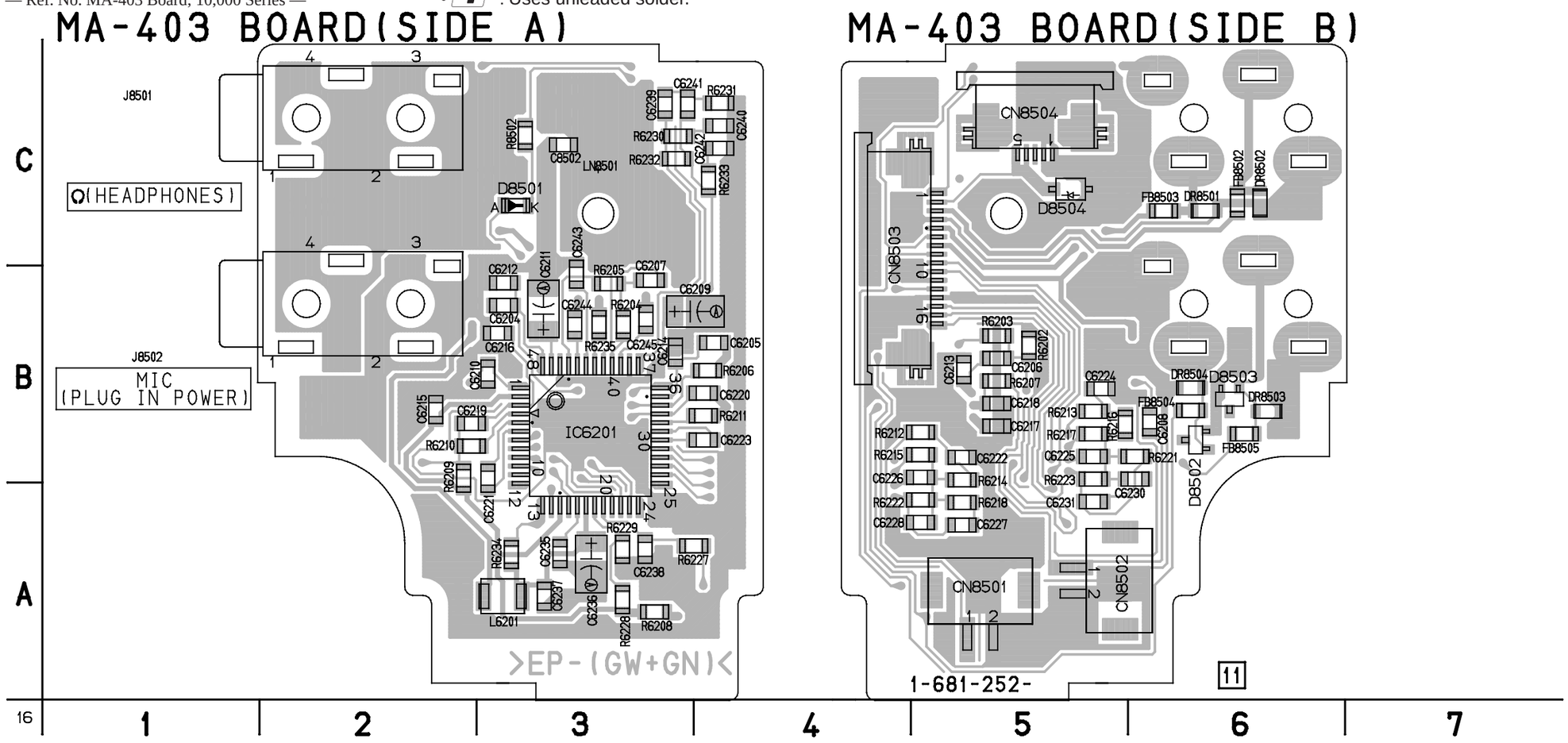
SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	→	→	→→	→
PB	⇨	⇨	⇨⇨	⇨

MA-403 (MIC AMP) PRINTED WIRING BOARD

— Ref. No. MA-403 Board; 10,000 Series —

• : Uses unleaded solder.

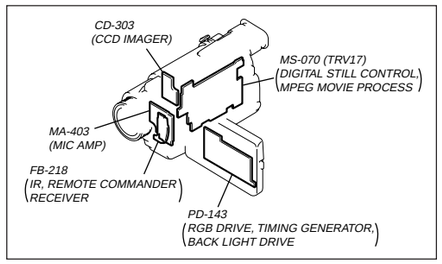


For printed wiring board

- Refer to page 4-98 for parts location.
- This board is the double-sided board.
- Chip parts

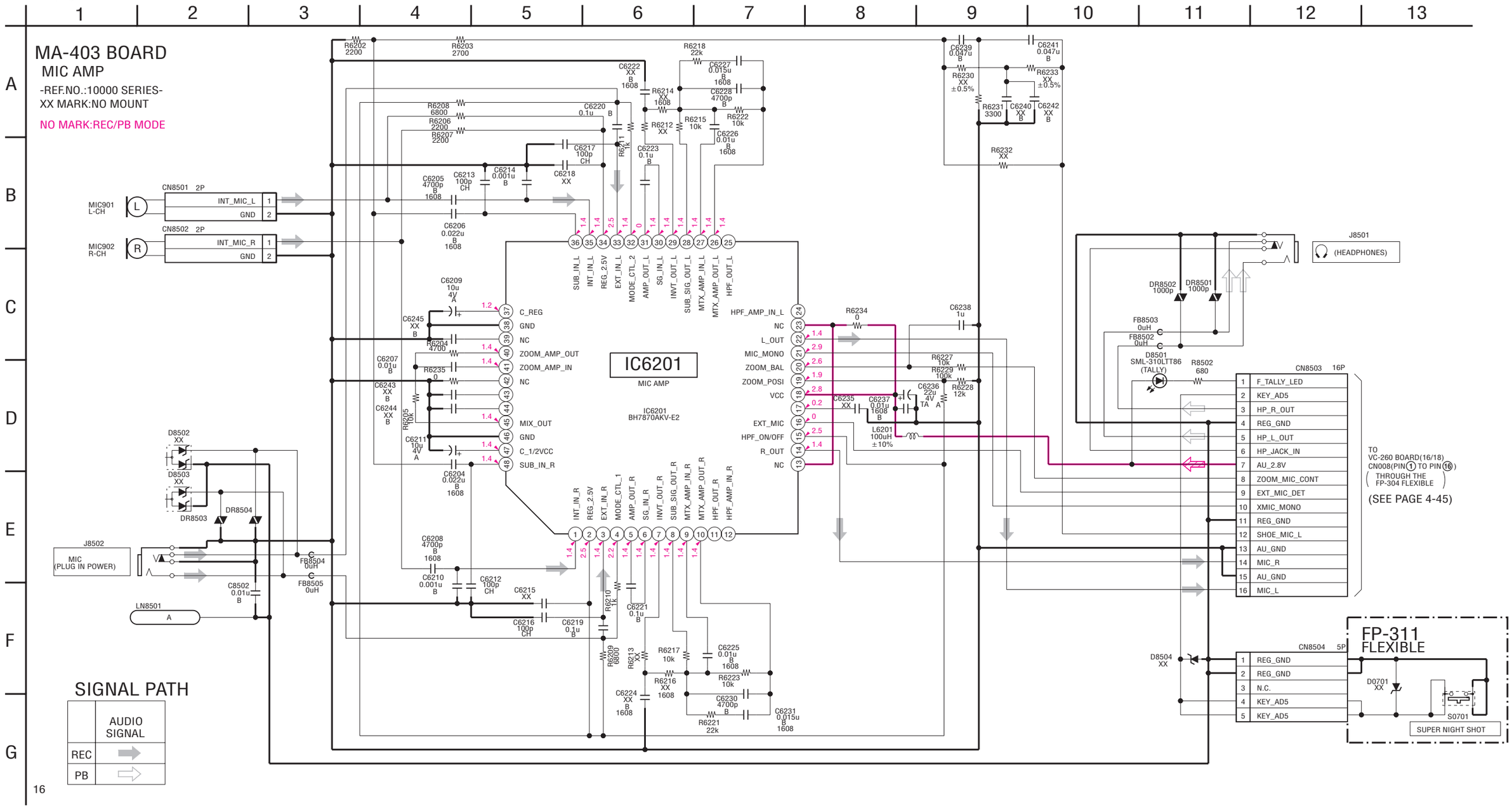
Diode

There are a few cases that the part printed on this diagram isn't mounted in this model.



For Schematic Diagram

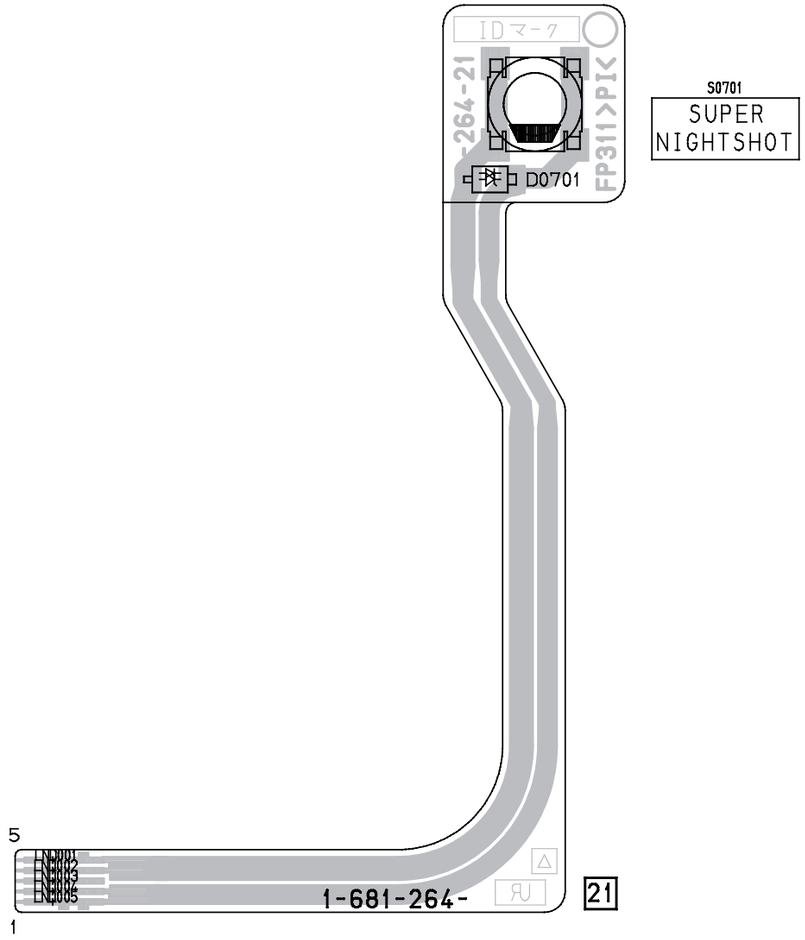
- Refer to page 4-79 for printed wiring board of MA-403 board.
- Refer to page 4-83 for printed wiring board of FP-311 flexible.



FP-309 (PANEL REVERSE), FP-310 (EJECT), FP-311 (SUPER NIGHTSHOT) FLEXIBLE BOARDS

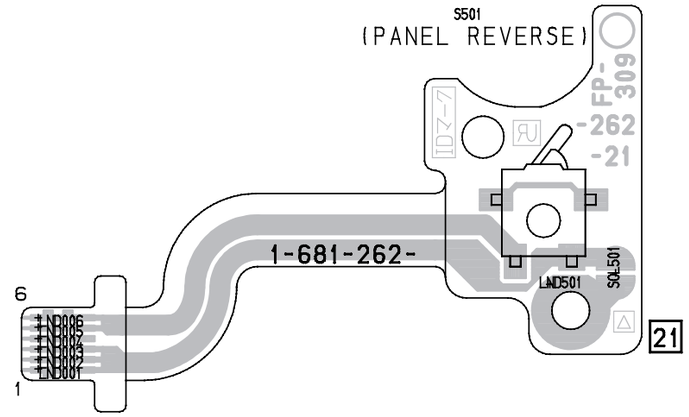
• Refer to page 4-82 for schematic diagram.

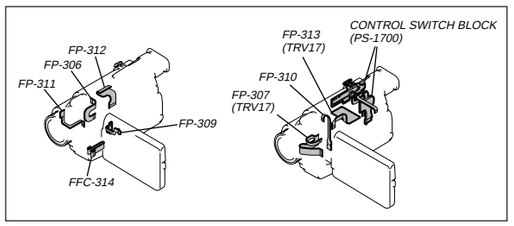
FP-311 FLEXIBLE



• Refer to page 4-87 for schematic diagram.

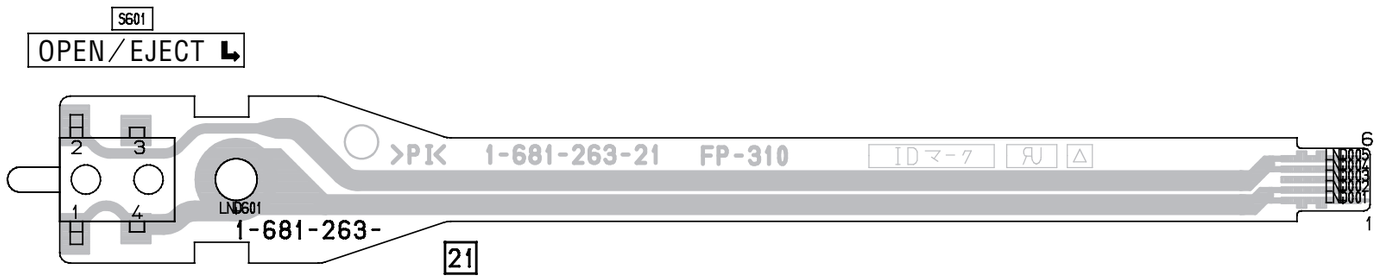
FP-309 FLEXIBLE





FP-310 FLEXIBLE

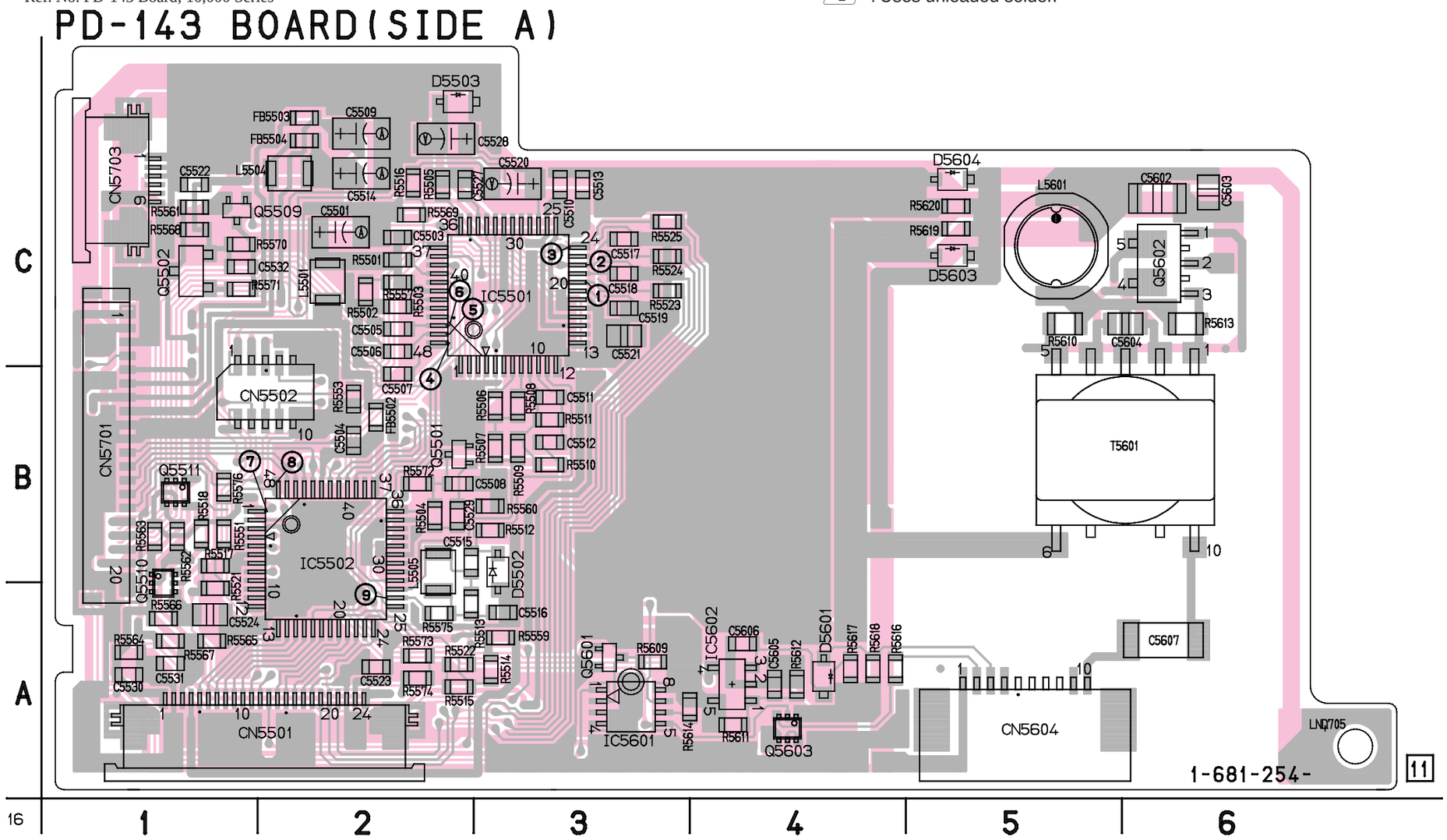
• Refer to page 4-78 for schematic diagram.



PD-143 (RGB DRIVE, TIMING GENERATOR, BACK LIGHT DRIVE) PRINTED WIRING BOARD

— Ref. No. PD-143 Board; 10,000 Series —

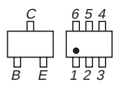
• : Uses unleaded solder.



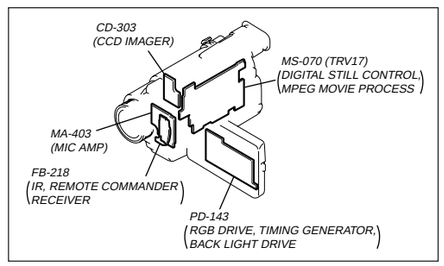
For printed wiring board

- Refer to page 4-98 for parts location.
- This board is the double-sided board.
- Chip parts

Transistor

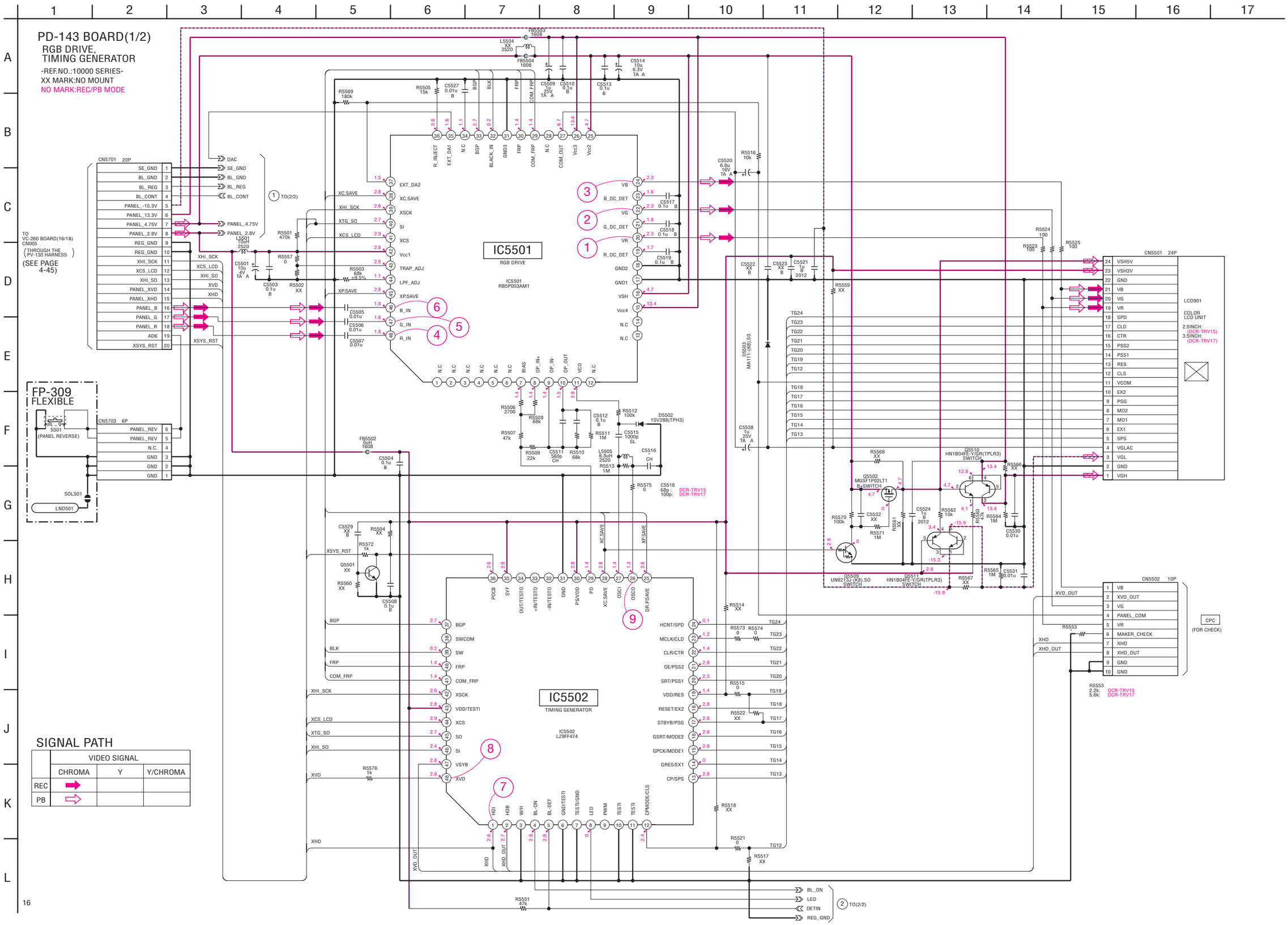


There are a few cases that the part printed on this diagram isn't mounted in this model.



For Schematic Diagram

- Refer to page 4-85 for printed wiring board of PD-143 board.
- Refer to page 4-84 for printed wiring board of FP-309 flexible.
- Refer to page 4-91 for waveforms.



RGB DRIVE, TIMING GENERATOR / PANEL REVERSE
PD-143 (1/2) FP-309

For Schematic Diagram
• Refer to page 4-85 for printed wiring board.

PD-143 BOARD(2/2)

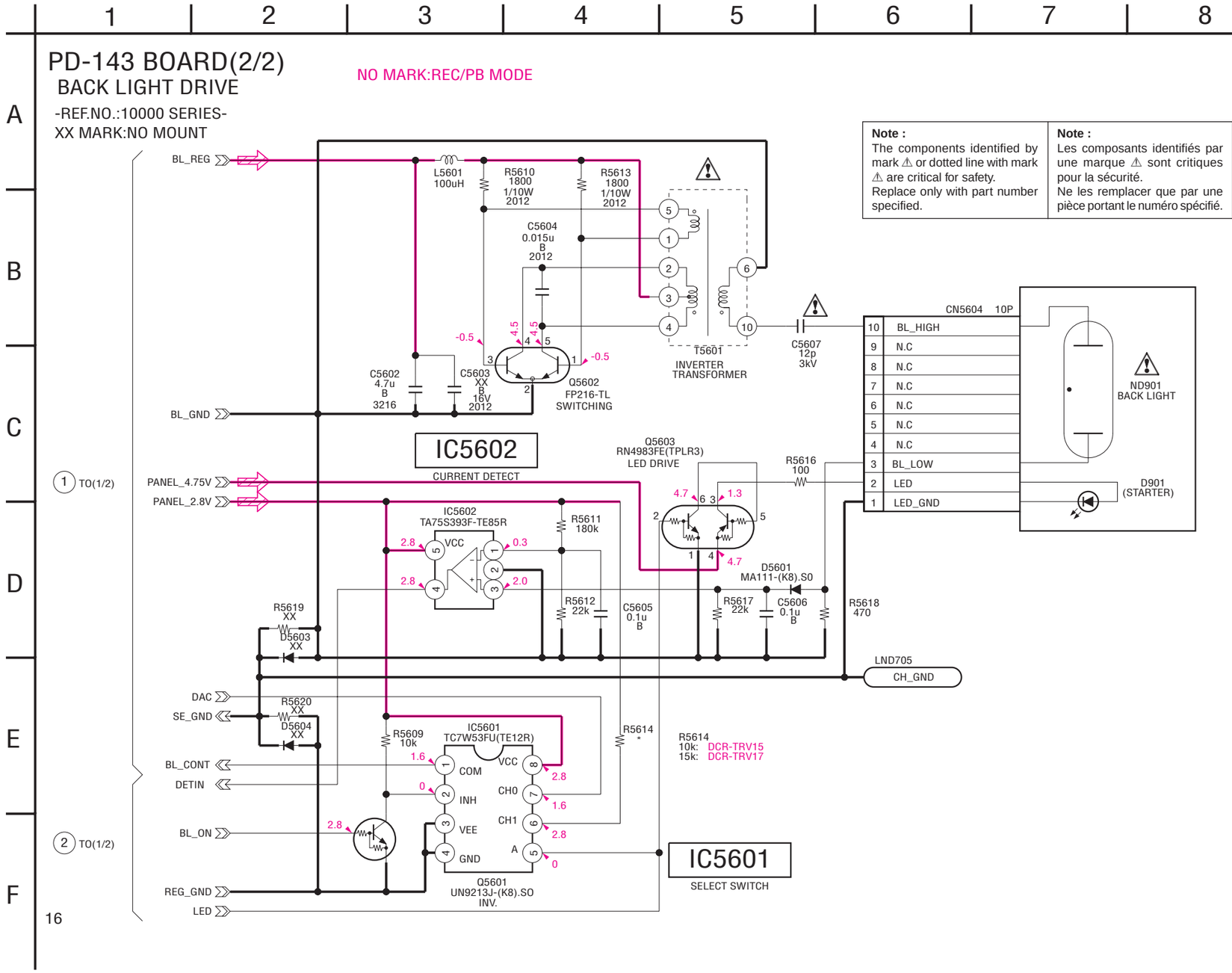
BACK LIGHT DRIVE

-REF.NO.:10000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

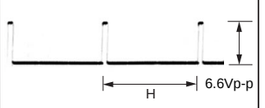
Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.



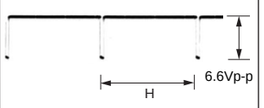
4-3. WAVEFORMS

CD-303 BOARD
CAMERA REC

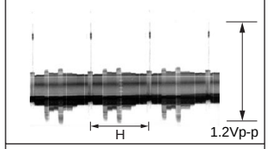
① IC8001 ①,②



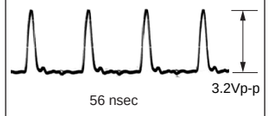
② IC8001 ③,④



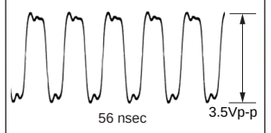
③ IC8001 ⑧



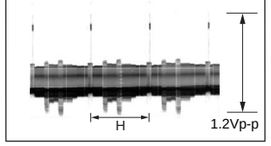
④ IC8001 ⑩



⑤ IC8001 ⑪,⑫

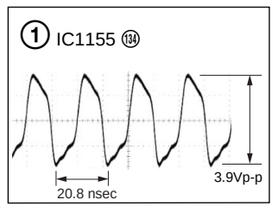


⑥ Q8001 Ⓔ



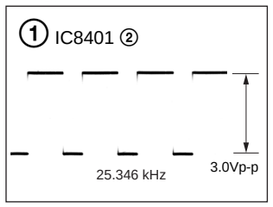
MS-070 BOARD

① IC1155 ⑭



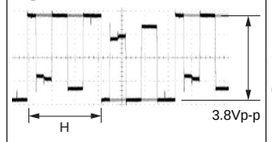
CK-101 BOARD
REC/PB

① IC8401 ②

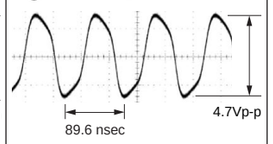


PD-143 BOARD
REC/PB

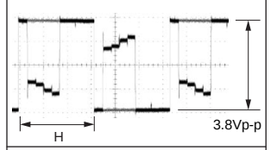
① IC5501 ⑳



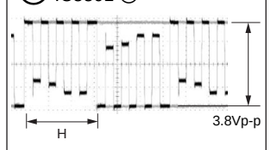
⑨ IC5502 ㉖



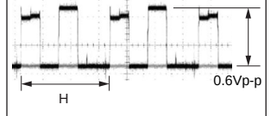
② IC5501 ㉒



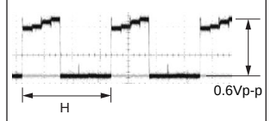
③ IC5501 ㉔



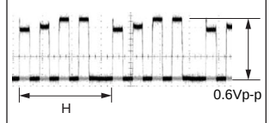
④ IC5501 ㊽



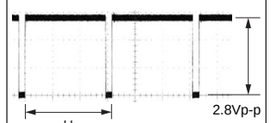
⑤ IC5501 ㊼



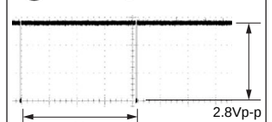
⑥ IC5501 ㊻



⑦ IC5502 ①



⑧ IC5502 ㊽



Waveforms and parts location of the VC-260 board are not shown.
Pages from 4-93 to 4-96 are not shown.

4-4. MOUNTED PARTS LOCATION

no mark : side A
* mark : side B

CD-303 BOARD

* C8001	A-3	
* C8003	A-4	
* C8004	B-4	
* C8005	B-4	
CN8001	B-2	
IC8001	A-1	
* L8001	B-4	
* Q8001	A-4	
* R8001	A-4	

MS-070 BOARD

* C1150	C-15	C1970	B-4	* R1162	D-12
* C1151	A-10	* C1971	C-12	R1163	E-1
* C1152	B-11	* C1991	A-11	R1165	C-5
* C1153	B-10	* C1992	A-11	R1166	C-5
* C1154	C-12	* C1993	A-11	* R1167	B-9
* C1155	B-12			* R1168	B-10
* C1156	C-12	* CN1152	C-16	* R1169	E-15
* C1157	E-11	CN1153	E-2	* R1170	C-10
* C1158	B-11	CN1901	A-3	* R1171	B-12
* C1159	D-12			* R1172	C-12
* C1160	B-11	* D1151	E-15	* R1173	C-12
* C1161	D-11	D1152	E-2	* R1174	B-14
* C1162	B-11	D1154	D-4	* R1175	B-10
* C1163	D-11	* D1155	C-15	* R1176	B-10
* C1164	B-14	* D1903	C-12	* R1177	B-10
* C1165	B-14			R1178	B-4
* C1166	C-10	* FB1151	D-12	R1179	B-4
* C1167	C-10	* FB1152	E-9	* R1180	D-11
* C1168	D-12	* FB1153	A-11	* R1182	E-15
* C1169	A-11	* FB1154	D-12	R1183	C-4
C1170	E-5	FB1155	E-1	R1184	C-5
C1171	C-6	* FB1156	B-12	* R1185	E-15
C1172	E-6	FB1157	B-2	* R1186	C-9
* C1173	D-12	* FB1158	E-15	* R1189	C-10
* C1174	E-10	* FB1159	B-15	R1190	C-7
* C1175	B-12	* FB1902	B-15	R1191	C-5
* C1176	B-12	* FB1903	B-14	R1192	C-5
* C1177	D-11	* FB1904	D-15	* R1193	C-16
* C1178	D-10	* FB1991	A-12	* R1194	C-16
* C1179	D-10			* R1195	D-12
* C1180	D-10	* IC1151	B-10	* R1196	D-12
* C1181	C-10	IC1152	C-5	* R1197	C-12
* C1182	B-10	IC1153	D-5	* R1198	C-12
* C1183	B-10	IC1154	D-6	R1199	B-4
* C1184	D-12	* IC1155	C-11	* R1200	C-12
* C1185	D-12	* IC1156	B-14	* R1201	C-12
* C1186	B-10	IC1157	B-4	R1202	C-4
* C1187	B-10	IC1158	B-2	R1203	C-5
* C1188	E-15	IC1158	B-2	R1204	C-5
C1189	B-5	IC1159	C-5	* R1205	C-13
* C1190	B-11	* IC1160	B-12	R1206	C-6
C1191	B-2	IC1162	C-6	R1207	C-5
C1192	C-2	* IC1901	D-14	R1208	C-5
* C1193	B-12	IC1902	D-3	* R1902	C-13
* C1194	C-12	* IC1903	D-13	* R1903	C-13
C1195	E-2	* IC1991	A-11	* R1904	C-13
C1196	E-1			* R1912	C-13
* C1197	A-11	* L1151	A-11	R1913	D-3
* C1198	B-11			* R1914	D-13
* C1199	B-11	* Q1153	E-11	* R1915	D-12
C1901	D-2	* Q1154	E-15	R1916	C-4
* C1902	C-13	* Q1155	E-15	R1917	C-4
C1903	D-3	Q1156	B-5	R1918	C-4
* C1904	B-14	* Q1157	D-12	R1995	E-2
* C1905	B-15	* Q1158	D-12	R1996	E-1
* C1906	E-15	* Q1159	E-11	* R1997	C-16
* C1907	C-13	* Q1901	C-12		
* C1908	C-14	Q1902	C-4	* RB1151	A-11
* C1909	C-15	Q1903	C-4	* RB1152	A-11
* C1910	D-15			* RB1154	C-9
* C1911	E-13	* R1151	B-11	* RB1155	C-10
* C1912	E-14	* R1152	B-10	* RB1156	B-10
* C1914	D-13	* R1153	C-12		
* C1915	C-13	* R1154	B-10	* VDR111	B-11
* C1916	D-13	* R1155	D-11	* VDR112	B-11
C1917	C-4	* R1156	B-12		
* C1967	B-10	* R1159	D-11	* X1151	B-11
C1968	C-6	* R1161	B-11	* X1152	B-12

LB-069 BOARD

* C702	A-3	
* C703	A-4	
CN702	B-1	
CN703	A-1	
* D701	A-4	
* D702	A-4	
* IC701	B-3	
* Q701	B-4	
* Q702	B-4	
* R701	B-4	
* R702	B-4	
* R703	B-4	
* R704	B-4	
* R705	A-4	
* R706	B-3	
* TH701	B-4	

CK-101 BOARD

BT8301	C-2	R8329	D-8		
		R8330	C-7		
* C8401	C-12	R8331	E-7		
		R8332	D-8		
CN8301	A-1	R8333	E-7		
* CN8302	C-16	R8334	E-6		
* CN8303	C-9	* R8335	A-13		
* CN8401	E-13	R8336	C-1		
		* R8401	C-13		
* D8301	C-16	* R8402	C-12		
D8303	C-4				
D8304	B-4	S8301	B-5		
D8305	A-4	S8302	A-3		
* D8306	C-9	S8303	D-5		
		S8304	C-6		
* IC8401	C-12	S8305	C-5		
		S8306	B-4		
* R8301	C-13	S8307	D-6		
R8303	A-4	S8308	B-6		
R8304	C-4	S8309	C-6		
R8305	C-4	S8310	D-7		
R8306	C-4	S8311	D-6		
R8307	A-4	S8312	C-8		
R8309	D-5	S8313	A-4		
R8310	B-5	S8314	E-6		
R8311	A-7	S8316	D-7		
* R8312	A-14	S8317	B-8		
R8313	D-6	S8318	A-6		
R8314	B-5	S8319	E-7		
R8315	A-7	S8320	D-8		
R8318	E-7	S8321	D-8		
R8319	D-7	S8322	B-7		
R8320	C-5	S8323	A-7		
* R8321	A-12	S8324	C-1		
R8323	E-8	S8325	E-8		
R8324	D-8	S8326	E-8		
R8325	C-6	S8327	A-8		
* R8326	A-14	S8328	D-8		
R8328	D-8				

no mark : side A
* mark : side B

FB-218 BOARD

* C8201 A-3
* C8204 C-3
C8205 A-1
C8206 A-1
C8207 B-1
C8208 B-1
C8209 C-1
C8210 C-1

* CN8201 A-4

D8201 A-2
D8202 B-2
* D8203 C-3
D8204 A-2

IC8201 C-2

L8201 A-1

PH8201 B-1
PH8202 C-1

* Q8201 A-3
* Q8203 C-4

* R8201 A-3
R8202 A-1
* R8206 A-4
* R8207 C-4
R8208 A-1

JK-204 BOARD

* C3101 A-5
* C3102 A-5

CN3101 E-2
CN3102 B-3
CN3103 F-2
CN3104 F-3

* D3101 D-5
* D3103 E-5
D3104 E-3
* D3106 C-6
* D3107 F-6

EB3110 A-3

* FB3101 B-6
* FB3102 B-5
* FB3103 D-6
* FB3104 D-5
* FB3105 C-6
* FB3106 A-5
* FB3107 D-5
* FB3108 A-5
* FB3109 C-5

J3101 D-2
J3102 B-2

* LF3101 E-6
* LF3102 E-6

* R3104 D-5
* R3105 C-6
* R3106 C-6
* R3107 B-5
* R3108 E-6
* R3109 E-5
* R3110 E-5
* R3111 E-6

SE3101 D-3
SE3102 A-3

* VD3101 C-6
* VD3102 D-6
* VD3103 B-6
* VD3104 C-6
* VD3105 B-5
* VD3106 B-6

MA-403 BOARD

C6204 B-3
C6205 B-4
* C6206 B-5
C6207 B-3
* C6208 B-6
C6209 B-3
C6210 B-3
C6211 B-3
C6212 B-3
* C6213 B-5
C6214 B-3
C6215 B-2
C6216 B-3
* C6217 B-5
* C6218 B-5
C6219 B-2
C6220 B-4
C6221 B-3
* C6222 B-5
C6223 B-4
* C6224 B-5
* C6225 B-5
* C6226 B-5
* C6227 A-5
* C6228 A-5
* C6230 B-6
* C6231 A-5
C6235 A-3
C6236 A-3
C6237 A-3
C6238 A-3
C6239 C-3
C6240 C-4
C6241 C-3
C6242 C-4
C6243 B-3
C6244 B-3
C6245 B-3
C8502 C-3

* CN8501 A-5
* CN8502 A-5
* CN8503 B-4
* CN8504 C-5

D8501 C-3
* D8502 B-6
* D8503 B-6
* D8504 C-5

* DR8501 C-5
* DR8502 C-5
* DR8503 B-6
* DR8504 B-6

* FB8502 C-5
* FB8503 C-5
* FB8504 B-6
* FB8505 B-6

IC6201 B-3

J8501 C-2
J8502 B-2

L6201 A-3

* R6202 B-5
* R6203 B-5
R6204 B-3
R6205 B-3
R6206 B-4
* R6207 B-5
R6208 A-3
R6209 B-2
R6210 B-2
R6211 B-4
* R6212 B-5
* R6213 B-5
* R6214 B-5
* R6215 B-5
* R6216 B-5
* R6217 B-5
* R6218 A-5
* R6221 B-6
* R6222 A-5
* R6223 B-5
R6227 A-3
R6228 A-3
R6229 A-3
R6230 C-3
R6231 C-4
R6232 C-3
R6233 C-4
R6234 A-3
R6235 B-3
R8502 C-3

PD-143 BOARD

C5501 C-2
C5503 C-2
C5504 B-2
C5505 C-2
C5506 C-2
C5507 B-2
C5508 B-2
C5509 C-2
C5510 C-3
C5511 B-3
C5512 B-3
C5513 C-3
C5514 C-2
C5515 B-2
C5516 A-3
C5517 C-3
C5518 C-3
C5519 C-3
C5520 C-3
C5521 C-3
C5522 C-1
C5523 A-2
C5524 A-1
C5527 C-2
C5528 C-2
C5529 B-2
C5530 A-1
C5531 A-1
C5532 C-1
C5602 C-6
C5603 C-6
C5604 C-6
C5605 A-4
C5606 A-4
C5607 A-6

CN5501 A-1
CN5502 B-2
CN5604 A-5
CN5701 B-1
CN5703 C-1

D5502 B-3
D5503 C-2
D5601 A-4
D5603 C-5
D5604 C-5

FB5502 B-2
FB5503 C-2
FB5504 C-2

IC5501 C-3
IC5502 B-2
IC5601 A-3
IC5602 A-4

L5501 C-2
L5504 C-2
L5505 B-2
L5601 C-5

Q5501 B-2
Q5502 C-1
Q5509 C-1
Q5510 A-1
Q5511 B-1
Q5601 A-3
Q5602 C-6
Q5603 A-4

R5501 C-2
R5502 C-2
R5503 C-2
R5504 B-2
R5505 C-2
R5506 B-3
R5507 B-3
R5508 B-3
R5509 B-3
R5510 B-3
R5511 B-3
R5512 B-3
R5513 A-3
R5514 A-3
R5515 A-2
R5516 C-2
R5517 B-1
R5518 B-1
R5521 A-1
R5522 A-2
R5523 C-3
R5524 C-3
R5525 C-3
R5551 B-1
R5553 B-2
R5557 C-2
R5559 A-3
R5560 B-3
R5561 C-1
R5562 B-1
R5563 B-1
R5564 A-1
R5565 A-1
R5566 A-1
R5567 A-1
R5568 C-1
R5569 C-2
R5570 C-1
R5571 C-1
R5572 B-2
R5573 A-2
R5574 A-2
R5575 A-2
R5576 B-1
R5609 A-3
R5610 C-5
R5611 A-4
R5612 A-4
R5613 C-6
R5614 A-3
R5616 A-4
R5617 A-4
R5618 A-4
R5619 C-5
R5620 C-5

T5601 B-6

SECTION 5
ADJUSTMENTS

1-1. Adjusting items when replacing main parts and boards.

When replacing main parts, adjust the items indicated by ● in the following table.

*1: When replacing the drum assy. or mechanism deck, reset the data of page: 2, address: A2 to A4 to "00". (Refer to "Record of Use check" of "5-4. SERVICE MODE")

*2: DCR-TRV17 model only

Adjustment Section	Adjustment	Replaced parts: Block replacement: Lens device	Mechanism deck	Color EVF block LCD902 (LCD panel)	LCD block LCD901 (LCD panel)	LCD block ND901 (Fluorescent tube)	Mechanism block M901 (Drum assy.) *1	Mechanism block M902 (Capstan motor)	Parts replacement: JK-204 board SE3101/3102 (YAW/PITCH sensor)	PD-143 board IC5501 (RGB driver(LCD))	PD-143 board IC5502 (Timing generator (LCD))	LB-069 board IC701,D701 (Back light (EVF))	VC-260 board IC1801 (RGB driver(EVF))	VC-260 board IC1802 (Timing generator (EVF))	CD-303 board IC8001 (CCD imager)	VC-260 board IC302, X301 (Timing generator)	VC-260 board IC303 (S/H,A/D conv.)	VC-260 board IC801 (LINE IN/OUT AMP)	VC-260 board IC5302 (DV signal process)	VC-260 board IC601 (EQ, A/D CONV., PLL)	VC-260 board IC602 (REC/PB AMP)	VC-260 board IC901 (IR transmitter)	VC-260 board IC401 (Camera process, EVR)
Initialization of B,C,D,E,F, 7,8 page data	Initialization of C, D, 8 page data																							
	Initialization of B page data *2																							
	Initialization of E, F, 7 page data																							
Camera	36MHz origin oscillation adj.															●								●
	HALL adj.	●																						●
	Flange back adj.	●													●									●
	Optical axis adj.	●													●									
	Color reproduction adj.														●		●							
	MAX GAIN adj.														●		●							
	AWB & LV standard data input														●		●							
	Auto white balance adj.														●		●							
	Mechanical shutter adj. *2	●																						
	Angular velocity sensor sens. adj.								●															
Color EVF	VCO adj.												●	●										
	RGB AMP adj.												●											
	Contrast adj.												●							●				
	Backlight adj.												●											
	White balance adj.			●								●	●											
LCD	VCO adj.									●	●													
	RGB AMP adj.									●														
	Contrast adj.									●										●				
	V COM level adj.									●														
	V COM adj.									●														
	White balance adj.				●	●				●														
System control	Serial No. input																							
Servo & RF	CAP FG duty adj.		●					●																
	Switching position adj.		●				●																	
	AGC center level adj.		●				●														●	●		
	APC & AEQ adj.		●				●														●	●		
	PLL fo & LPF fo adj.		●				●														●	●		
Video	Chroma BPF fo adj.																	●						
	S VIDEO OUT Y level adj.																	●	●					
	S VIDEO OUT chroma level adj.																	●	●					
IR	IR video carrier frequency adj.																	●					●	●
	IR video deviation adj.																	●					●	●
	IR audio deviation adj.																						●	●
Mechanism	Tape path adj.		●				●	●																

Table. 5-1-1 (1)

• Adjusting items when replacing a board or EEPROM

When replacing a board or EEPROM, adjust the items indicated by ● in the following table.

Adjustment Section	Adjustment	Replaced parts: Block replacement: VC-260 board (COMPLETE)	JK-204 board (COMPLETE)	PD-143 board (COMPLETE)	LB-069 board (COMPLETE)	MS-070 board (COMPLETE) *2	EEPROM replacement: VC-260 board IC4002 (EEPROM)	VC-260 board IC4701 (EEPROM)	MS-070 board IC1154 (Flash memory) *2	Supporting RadarW
Initialization of B,C,D,E,F, 7,8 page data	Initialization of C, D, 8 page data	●						●		
	Initialization of B page data *2					●			●	
	Initialization of E, F, 7 page data	●					●			
Camera	36MHz origin oscillation adj.	●					●			
	HALL adj.	●					●			●
	Flange back adj.	●					●			●
	Optical axis adj.	●					●			
	Color reproduction adj.	●					●			
	MAX GAIN adj.	●					●			●
	AWB & LV standard data input	●					●			●
	Auto white balance adj.	●					●			●
	Mechanical shutter adj. *2	●					●			●
	Angular velocity sensor sens. adj.	●	●				●			
Color EVF	VCO adj.	●						●		
	RGB AMP adj.	●						●		
	Contrast adj.	●						●		
	Backlight adj.	●						●		
	White balance adj.	●			●			●		
LCD	VCO adj.	●		●				●		
	RGB AMP adj.	●		●				●		
	Contrast adj.	●		●				●		
	V COM level adj.	●		●				●		
	V COM adj.	●		●				●		
	White balance adj.	●		●				●		
System control	Serial No. input	●						●		
Servo & RF	CAP FG duty adj.	●						●		●
	Switching position adj.	●						●		●
	AGC center level adj.	●						●		●
	APC & AEQ adj.	●						●		●
	PLL fo & LPF fo adj.	●						●		●
Video	Chroma BPF fo adj.	●						●		
	S VIDEO OUT Y level adj.	●						●		
	S VIDEO OUT chroma level adj.	●						●		
IR	IR video carrier frequency adj.	●					●			
	IR video deviation adj.	●					●			
	IR audio deviation adj.	●					●			
Mechanism	Tape path adj.									

Table. 5-1-1 (2)

5-1. CAMERA SECTION ADJUSTMENT

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of Service Tools

• Oscilloscope • Color monitor • Vectorscope
• Regulated power supply • Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.4	J-6080-806-A	White balance check
	ND filter 0.1	J-6080-807-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjustment remote commander (RM-95 upgraded). (Note 1)	J-6082-053-B	
J-6	Siemens star chart	J-6080-875-A	For checking the flange back
J-7	Clear chart for pattern box	J-6080-621-A	
J-8	CPC-8 jig	J-6082-388-A	For adjusting the video section For adjusting the color viewfinder For adjusting the LCD block
J-9	Extension cable (100P, 0.5mm)(Note2)	J-6082-352-A	For extension between the MS-070 board (CN1901) and the VC-260 board (CN002)
J-10	IR receiver jig	J-6082-383-A	For adjusting the IR transmitter
J-11	Mini pattern box	J-6082-353-B	For adjusting the flange back
J-12	Camera table	J-6082-384-A	For adjusting the flange back
J-13	Multi CPC jig	J-6082-311-A	For adjusting the LCD block

Note 1: If the micro processor IC in the adjustment remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

Note 2: DCR-TRV17 model only

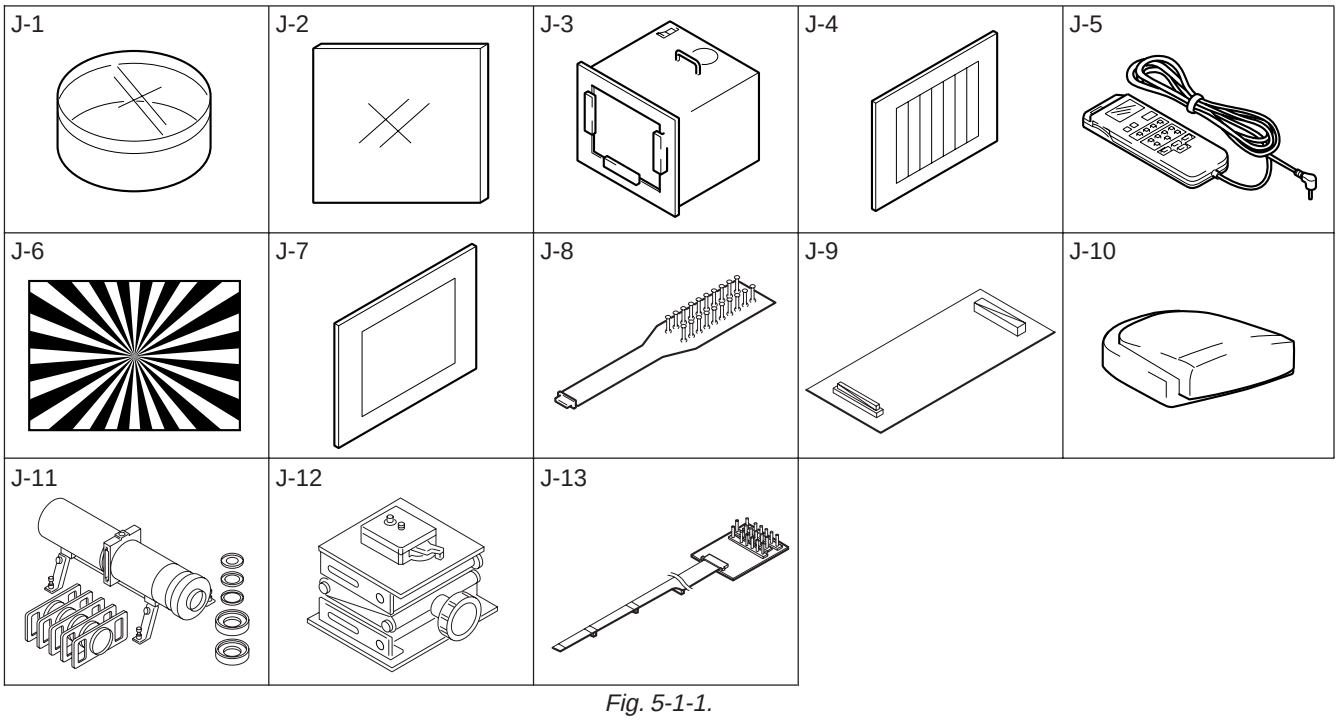


Fig. 5-1-1.

1-1-2. Preparations

Note 1: For details of how remove the cabinet and boards, refer to "2. DISASSEMBLY".

Note 2: When performing only the adjustments, the lens block and boards need not be disassembled.

1) Connect the equipment for adjustments according to Fig. 5-1-2.

Note 3: As removing the cabinet (R) (removing the VC-260 board CN009) means removing the lithium 3V power supply (BT8301), data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the data of page: 2, address: A2 to AA (data on history of use) and the data of page: 2, address: B0 to C6 (self-diagnosis data). (Refer to "5-4.Service Mode" for the data on the history use and the self-diagnosis data.)

Note 4: Setting the "Forced Camera Power ON" Mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjustment remote commander.
The above procedure will enable the camera power to be turned on with the control switch block (PS-1700) removed. After completing adjustments, be sure to exit the "Forced Camera Power ON Mode".

Note 5: Exiting the "Forced Camera Power ON" Mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
3) Select page: 0, address: 01, and set data: 00.

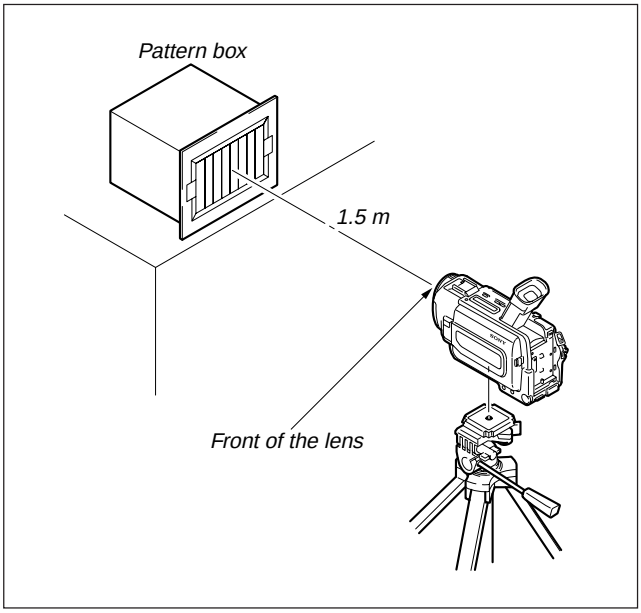


Fig. 5-1-2.

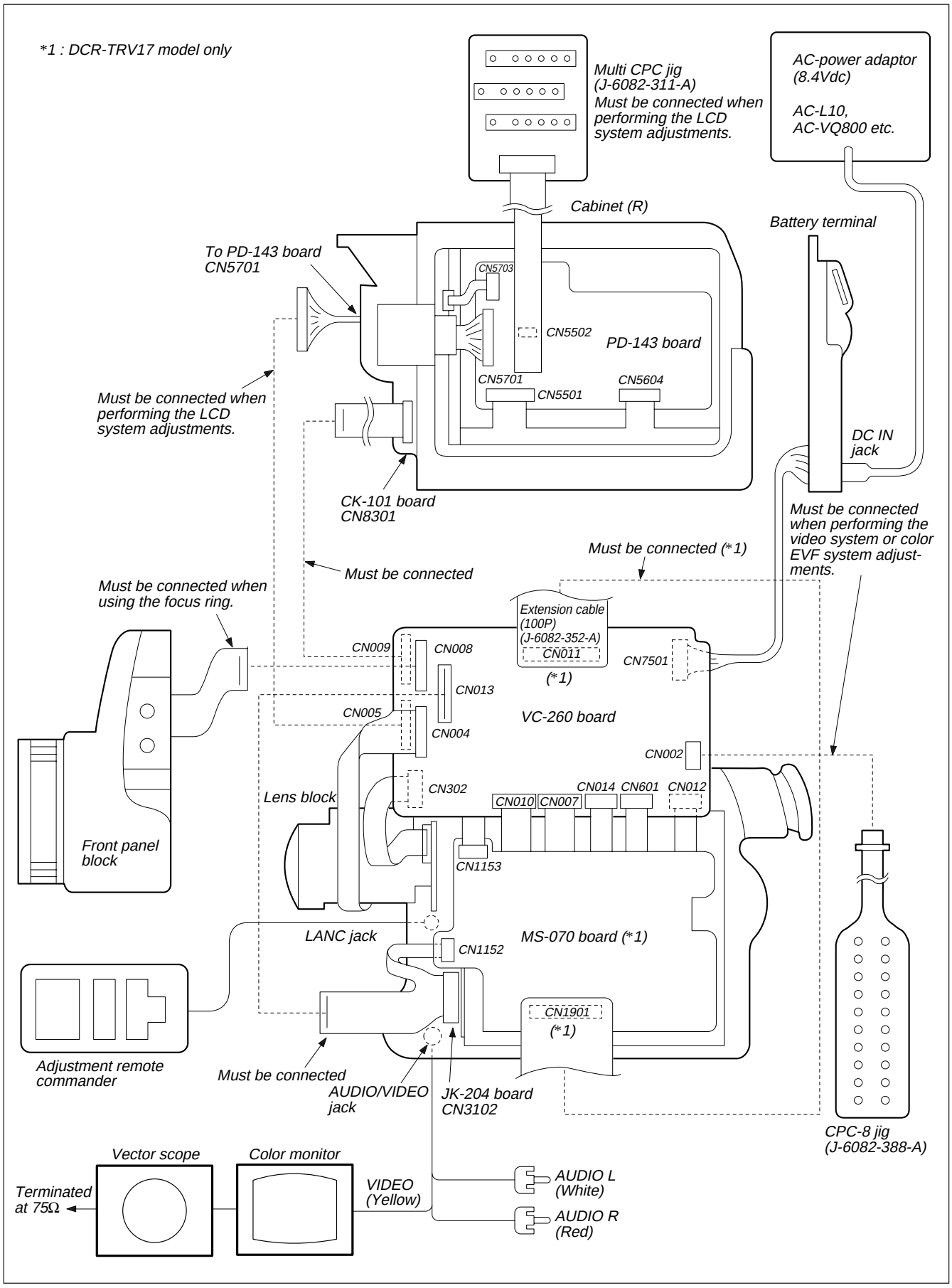

*1 : DCR-TRV17 model only
Multi CPC jig
(J-6082-311-A)
Must be connected when performing the LCD system adjustments.
AC-power adaptor
(8.4Vdc)
AC-L10,
AC-VQ800 etc.
Cabinet (R)
Battery terminal
To PD-143 board
CN5701
CN5703
CN5502
PD-143 board
CN5701
CN5501
CN5604
Must be connected when performing the LCD system adjustments.
DC IN
jack
CK-101 board
CN8301
Must be connected (*1)
Must be connected
Must be connected when performing the video system or color EVF system adjustments.
Must be connected when using the focus ring.
Extension cable
(100P)
(J-6082-352-A)
CN011
(*1)
CN009
CN008
CN013
CN005
CN004
VC-260 board
CN7501
CN002
CN302
CN014
CN601
CN012
CN010
CN007
Lens block
Front panel
block
CN1153
LANC jack
MS-070 board (*1)
CN1152
CN1901
(*1)
Adjustment remote
commander
Must be connected
AUDIO/VIDEO
jack
JK-204 board
CN3102
CPC-8 jig
(J-6082-388-A)
Vector scope
Color monitor
Terminated
at 75Ω
VIDEO
(Yellow)
AUDIO L
(White)
AUDIO R
(Red)

Fig. 5-1-3.

1-1-3. Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments without loading cassette.

1. POWER switch (PS-1700 block) ..... CAMERA
2. NIGHT SHOT switch (Lens block) ..... OFF
3. DEMO MODE (Menu setting) ..... OFF
4. DIGITAL ZOOM (Menu setting) ..... OFF
5. STEADY SHOT (Menu setting) ..... OFF
6. PROGRAM AE (Menu setting) ..... AUTO
7. WHITE BALANCE (Menu setting) ..... AUTO
8. 16 : 9 WIDE (Menu setting) ..... OFF
9. PICTURE EFFECT (Menu setting) ..... OFF
10. DIGITAL EFFECT (Menu setting) ..... OFF
11. DISPLAY (Menu setting) ..... V-OUT/LCD
12. DISPLAY (CK-101 board) ..... ON
13. FOCUS switch (CK-101 board) ..... MANUAL

2. Order of Adjustments

Basically carry out adjustments in the order given.

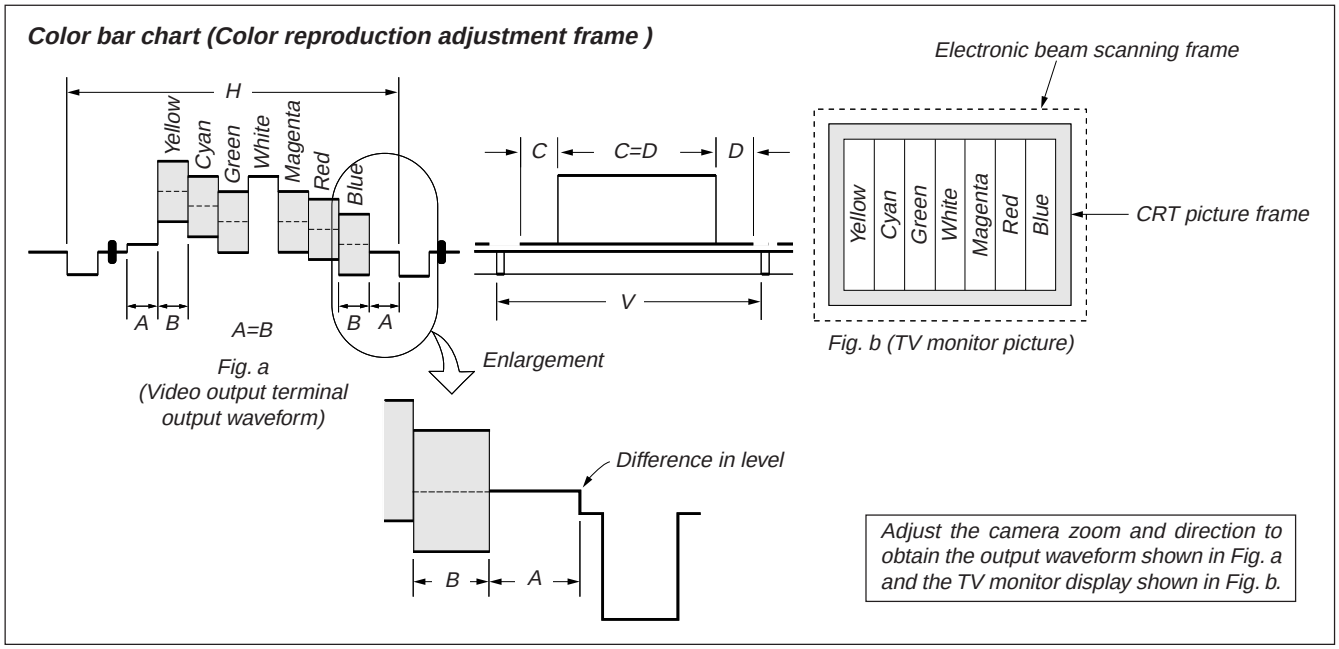


Fig.5-1-4.

3. Subjects

1) Color bar chart (Color reproduction adjustment frame)
   When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 5-1-4. (Color reproduction adjustment frame)
2) Clear chart (Color reproduction adjustment frame)
   Remove the color bar chart from the pattern box and insert a clear chart in its place. (Do not perform zoom operations during this time.)
3) Flange back adjustment chart
   Make the chart shown in Fig. 5-1-5 using A0 size (1189mm × 841mm) black and white vellum paper.

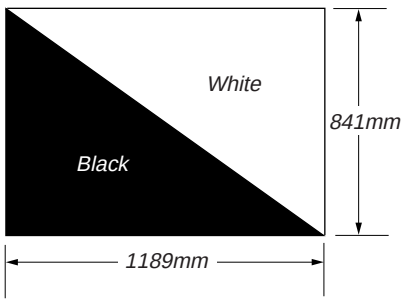


Fig. 5-1-5.

Note: Use matte vellum paper bigger than A0, and make sure the edges of the black and white paper joined together are not rough.

1-2. INITIALIZATION OF B, C, D, E, F, 7, 8 PAGE DATA

1-2-1. INITIALIZATION OF C, D, 8 PAGE DATA

1. Initializing the C, D, 8 Page Data

Note1: If "Initializing the C, D, 8 Page Data" is performed, all data of the C page, D page and 8 page will be initialized. (It is impossible to initialize a single page.)

Note2: If the C, D, 8 page data has been initialized, the following adjustments need to be performed again.
1) Modification of C, D, 8 page data
2) Serial No. input
3) Servo and RF system adjustments
4) Video system adjustments
5) Color viewfinder system adjustments
6) LCD system Adjustments

Adjusting page	C
Adjusting Address	10 to FF
Adjusting page	D
Adjusting Address	10 to FF
Adjusting page	8
Adjusting Address	00 to FF

Initializing Method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data
2	3	81		Check that the data is "00".
3	3	80	0A	Set the data, and press the PAUSE button.
4	3	80		Check that the data changes to "1A"
5				Perform "Modification of C, D, 8 Page Data".

2. Modification of C, D, 8 Page Data

If the C, D, 8 page data has been initialized, change the data of the "Fixed data-2" address shown in the following tables by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
3) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification of C, D, 8 Page data

Order	Page	Address	Data	Procedure
1	2	00	29	Set the data
2	2	01	29	Set the data, and press the PAUSE button.

Note: If the following symptoms occur after completing of the "Modification of C, D, 8 page data", check that the data of the "Fixed data-2" addresses of D page are same as those of the same model of the same destination.
1) The battery end mark on the LCD or viewfinder screen is flashing.
2) The power is shut off so that unit cannot operate.

3. C Page Table

Note: Fixed data-1: Initialized data. (Refer to "1. Initializing the C, D, 8 Page Data".)
Fixed data-2: Modified data. (Refer to "2. Modification of C, D, 8 Page Data".)

Address	Initial value	Remark
00 to 0F		
10	EE	Switching position adj.
11	00	
12	00	
13	00	
14 to 15		Fixed data-1
16	E0	Cap FG duty adj.
17		Fixed data-2
18	2A	AEQ adj.
19	2A	
1A		Fixed data-1
1B	32	AEQ adj.
1C	32	
1D		Fixed data-1
1E	25	AGC center level adj.
1F	3E	PLL fo adj.
20	3E	
21	DC	APC adj.
22	99	LPF fo adj.
23 to 24		Fixed data-1
25	88	S VIDEO out Y level adj.
26	E3	S VIDEO out Cr level adj.
27	A1	S VIDEO out Cb level adj.
28	04	Chroma BPF fo adj.
29	20	PLL fo fine adj.
2A to 2B		Fixed data-1
2C	03	APC adj.
2D to 42		Fixed data-1
43		Fixed data-2
44 to 4B		
4C		Fixed data-2
4D		
4E to 4F		Fixed data-1
50		Fixed data-2
51		
52 to 6F		Fixed data-1
70		Fixed data-2
71		(Modified data. Copy the data built in
72		the same model.)

C page

Address	Initial value	Remark
73		Fixed data-2
74		(Modified data. Copy the data built in the same model.)
75 to 83		Fixed data-1
84		Fixed data-2
85 to 86		Fixed data-1
87		Fixed data-2
88		
89 to 9A		Fixed data-1
9B		Fixed data-2
9C		(Modified data. Copy the data built in the same model.)
9D		
9E		
9F		
A0		
A1 to A2		Fixed data-1
A3		Fixed data-2
A4		(Modified data. Copy the data built in the same model.)
A5		
A6		
A7		
A8		
A9 to AA		Fixed data-1
AB		Fixed data-2
AC		Fixed data-1
AD		Fixed data-2
AE		Fixed data-1
AF		Fixed data-2
B0		
B1		Fixed data-1
B2		Fixed data-2
B3		(Modified data. Copy the data built in the same model.)
B4		
B5		
B6		
B7		
B8		
B9		
BA		
BB to C1		Fixed data-1
C2		Fixed data-2
C3		(Modified data. Copy the data built in the same model.)
C4		
C5 to C6		Fixed data-1
C7		Fixed data-2
C8 to D5		Fixed data-1
D6		Fixed data-2
D7		(Modified data. Copy the data built in the same model.)
D8		
D9		
DA		
DB		
DC		
DD		
DE		
DF		Fixed data-2
		(Modified data. Copy the data built in the same model.)
E0 to E5		Fixed data-1
E6		Fixed data-2
E7		Fixed data-1
E8	08	Serial No. input
E9	00	
EA	46	
EB	01	
EC	02	
ED	00	
EE	00	
EF	00	
F0 to F3		Fixed data-1
F4	00	Emergency memory address
F5	00	
F6	00	
F7	00	
F8	00	
F9	00	
FA	00	
FB	00	
FC	00	
FD	00	
FE	00	
FF	00	

Table. 5-1-2.

4. D Page Table

Note: Fixed data-1: Initialized data. (Refer to "1. Initializing the C, D, 8 Page Data".)
Fixed data-2: Modified data. (Refer to "2. Modification of C, D, 8 Page Data".)

Address	Initial value	Remark
00 to 0F		
10	00	Test mode
11		Fixed data-1
12		Fixed data-2
13		(Modified data. Copy the data built in the same model.)
14 to 1C		Fixed data-1
1D		Fixed data-2
1E		
1F to 21		Fixed data-1
22		Fixed data-2
23		Fixed data-1
24		Fixed data-2
25		
26		Fixed data-1
27		Fixed data-2
28		(Modified data. Copy the data built in the same model.)
29		
2A		Fixed data-1
2B		Fixed data-2
2C		Fixed data-1
2D		Fixed data-2
2E		(Modified data. Copy the data built in the same model.)
2F		
30		
31		Fixed data-1
32		Fixed data-2
33		
34 to 37		Fixed data-1
38		Fixed data-2
39		Fixed data-1
3A		Fixed data-2
3B to 3F		Fixed data-1
40		Fixed data-2
41		(Modified data. Copy the data built in the same model.)
42		
43		
44 to 4C		Fixed data-1
4D		Fixed data-2
4E		(Modified data. Copy the data built in the same model.)
4F		
50		
51		
52		
53		
54		
55 to 57		Fixed data-1
58		Fixed data-2
59		(Modified data. Copy the data built in the same model.)
5A		
5B		Fixed data-1
5C		Fixed data-2
6D to 63		Fixed data-1
64		Fixed data-2
65		(Modified data. Copy the data built in the same model.)
66		
67		
68		
69 to 6A		Fixed data-1
6B		Fixed data-2
6C		(Modified data. Copy the data built in the same model.)
6D		
6E		
6F		
70 to 8F		Fixed data-1
90	62	Backlight adj. (EVF)
91	BA	
92	80	VCO adj. (EVF)
93	70	
94		Fixed data-2
95	AD	RGB AMP adj. (EVF)
96		Fixed data-1
97	7E	White balance adj.(EVF)
98	80	
99	2D	Contrast adj. (EVF)
9A		Fixed data-1
9B		Fixed data-2
9C		(Modified data. Copy the data built in the same model.)
9D		
9E		
9F		Fixed data-1
A0		Fixed data-2
A1		
A2	80	VCO adj. (LCD)
A3	70	
A4	80	V COM adj. (LCD)
A5	30	RGB AMP adj. (LCD)
A6		Fixed data-2
A7	C0	V COM level adj. (LCD)
A8	80	White balance adj.(LCD)
A9	80	
AA	50	Contrast adj. (LCD)
AB		Fixed data-2
AC		(Modified data. Copy the data built in the same model.)
AD		
AE		
AF		
B0		
B1		
B2 to D5		Fixed data-1
D6		Fixed data-2
D7 to D8		Fixed data-1
D9		Fixed data-2
DA		(Modified data. Copy the data built in the same model.)
DB		
DC to DD		Fixed data-1
DE		Fixed data-2

D page

Address	Initial value	Remark
DF	Fixed data-2	
E0 to FF	Fixed data-1	

Table. 5-1-3.

5. 8 Page Table

Note: Fixed data-1: Initialized data. (Refer to “1. Initializing the C, D, 8 Page Data”.)
Fixed data-2: Modified data. (Refer to “2. Modification of C, D, 8 Page Data”.)

Address	Remark
00 to 52	Fixed data-1
53	Fixed data-2
54 to 98	Fixed data-1
99	Fixed data-2
9A to FF	Fixed data-1

Table. 5-1-4.

1-2-2. INITIALIZATION OF B PAGE DATA (DCR-TRV17)

Note1: When reading the B page data, insert a "Memory Stick" into the "Memory Stick" slot.
Note2: "INITIALIZATION OF B PAGE DATA" should be carried out upon completion of "INITIALIZATION OF C, D, 8 PAGE DATA".

Switch setting:
POWER ..... MEMORY

1. Initializing the B Page Data

Note: If the B page data has been initialized, the following adjustments need to be performed again.
1) Modification of B page data

Adjusting page	B
Adjusting Address	00 to FF

Initializing Method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	2	8F	02	Set the data, and press PAUSE button.
3	2	8F	03	Set the data, and press PAUSE button.
4	2	8F	02	Set the data, and press PAUSE button.
5	2	8F	00	Set the data, and press PAUSE button.
6	5	0E	00	Set the data.
7	5	01	F3	Set the data, and press PAUSE button.
8	5	00	01	Set the data, and press PAUSE button.
9	5	0E		Check that the data changes to "01".
10				Perform "Modification of B Page Data".

2. Modification of B Page Data

If the B page data has been initialized, change the data of the "Fixed data-2" address shown in the following tables by manual input.

Preparations:

Order	Page	Address	Data	Procedure
1	2	8F	02	Set the data, and press PAUSE button.
2	2	8F	03	Set the data, and press PAUSE button.
3	2	8F	02	Set the data, and press PAUSE button.
4	2	8F	00	Set the data, and press PAUSE button.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
3) **When changing the data, don't press the PAUSE button.**

Processing after Completing Modification of B Page data:

Order	Page	Address	Data	Procedure
1	5	0E	00	Set the data, and press PAUSE button.
2	5	01	FB	Set the data, and press PAUSE button.
3	5	00	01	Set the data, and press PAUSE button.
4	5	0E		Check that the data changes to "01". (The change data are written in the flash memory.)
5	2	00	29	Set the data.
6	2	01	29	Set the data, and press PAUSE button.

3. B Page Table

Note: Fixed data-1: Initialized data. (Refer to "1. Initializing the B Page Data".)
Fixed data-2: Modified data. (Refer to "2. Modification of B Page Data".)

Address	Remark
00 to B4	Fixed data-1
B5	Fixed data-2
B6 to FF	Fixed data-1

Table. 5-1-5.

1-2-3. INITIALIZATION OF E, F, 7 PAGE DATA

1. Initializing the E, F, 7 Page Data

Note1: If "Initializing the E, F, 7 Page Data" is performed, all data of the E page, F page and 7 page will be initialized. (It is impossible to initialize a single page.)

Note2: If the E, F, 7 page data has been initialized, following adjustments need to be performed again.
1) Modification of E, F, 7 page data
2) Camera system adjustments
3) IR transmitter adjustments

Adjusting page	F
Adjusting Address	10 to FF
Adjusting page	E
Adjusting Address	00 to FF
Adjusting page	7
Adjusting Address	00 to 5F

Switch setting:

POWER ..... CAMERA

Initializing Method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	01	2D	Set the data, and press PAUSE button.
3	6	03	01	Set the data, and press PAUSE button.
4	6	02		Check that the data changes to "01".
5				Perform "Modification of E, F, 7 Page Data".

2. Modification of E, F, 7 Page Data

If the E, F, 7 page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
3) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification of E, F, 7 Page data

1) Select page: 0, address: 01, and set data: 00.
2) Turn off the power and turn on again.

3. F Page Table

Note1: Fixed data-1: Initialized data. (Refer to "1. Initializing the E, F, 7 Page Data".)
Fixed data-2: Modified data. (Refer to "2. Modification of E, F, 7 Page Data".)

Address	Initial value	Remark
00 to 0F		
10 to 11		Fixed data-1
12	80	36MHz origin osc adj.
13 to 16		Fixed data-1
17	81	HALL adj.
18	A0	
19	17	
1A to 1C		Fixed data-1
1D	9A	MAX GAIN adj.
1E	80	AWB & LV standard data input
1F	7A	
20 to 2F		Fixed data-1
30	90	AWB & LV standard data input
31	3E	
32	43	
33	59	
34		Fixed data-1
35	22	Color reproduction adj.
36		Fixed data-1
37	27	Color reproduction adj.
38 to 3B		Fixed data-1
3C	00	Color reproduction adj.
3D	F1	
3E to 3F		Fixed data-1
40	80	Auto white balance adj.
41	40	
42 to 49		Fixed data-1
4A	51	Flange back adj.
4B	19	
4C	22	
4D	20	
4E	93	
4F	13	
50	00	
51	00	
52 to 59		Fixed data-1
5A	46	Flange back adj.
5B	00	
5C	19	
5D	00	
5E	2A	
5F	00	
60 to 65		Fixed data-1
66	5A	Angular velocity sensor sensitivity adj.
67	62	
68		Fixed data-1
69	00	Optical axis adj.
6A to 6B		Fixed data-1
6C	30	IR audio deviation adj.
6D	30	IR video deviation adj.
6E	80	IR video carrier frequency adj.

F page

Address	Initial value	Remark
6F		Fixed data-1
70	00	Mechanical shutter adj.
71	0C	
72	34	
73	09	
74	70	
75	07	
76	AA	
77	06	
78	28	
79	06	
7A	00	
7B	40	
7C	00	
7D	3A	
7E	00	
7F	31	
80	00	
81	31	
82	00	
83	35	
84	1E	
85 to 8D		Fixed data-1
8E		Fixed data-2
8F		
90 to 92		Fixed data-1
93		Fixed data-2
94		
95		Fixed data-1
96		Fixed data-2
97 to 9E		Fixed data-1
9F		Fixed data-2
A0 to A7		Fixed data-1
A8		Fixed data-2
A9 to AF		Fixed data-1
B0		Fixed data-2
B1		
B2 to B3		Fixed data-1
B4		Fixed data-2
B5 to C2		Fixed data-1
C3		Fixed data-2
C4 to D4		Fixed data-1
D5		Fixed data-2
D6 to DD		Fixed data-1
DE		Fixed data-2
DF to E2		Fixed data-1
E3		Fixed data-2
E4 to FF		Fixed data-1

Table. 5-1-6.

4. E Page Table

Note1: Fixed data-1: Initialized data. (Refer to "1. Initializing the E, F, 7 Page Data".)
Fixed data-2: Modified data. (Refer to "2. Modification of E, F, 7 Page Data".)

Address	Initial value	Remark
00 to 50		Fixed data-1
51		Fixed data-2
52 to 69		Fixed data-1
6A		Fixed data-2
6B to 71		Fixed data-1
72		Fixed data-2
73 to 7E		Fixed data-1
7F		Fixed data-2
80 to 83		Fixed data-1
84		Fixed data-2
85		
86		
87		
88 to 8B		Fixed data-1
8C		Fixed data-2
8D to 8E		Fixed data-1
8F		Fixed data-2
90		
91		
92 to 94		Fixed data-1
95		Fixed data-2
96 to 97		Fixed data-1
98		Fixed data-2
99 to AF		Fixed data-1
B0		Fixed data-2 (Modified data. Copy the data built in the same model.)
B1		
B2		
B3		
B4		
B5		
B6 to BA		Fixed data-1
BB		Fixed data-2
BC to CF		Fixed data-1
D0	26	Optical axis adj.
D1 to DD		Fixed data-1
DE	5F	Optical axis adj.
DF to FB		Fixed data-1
FC		Fixed data-2
FD to FF		Fixed data-1

Table. 5-1-7.

5. 7 Page Table

Note1: Fixed data-1: Initialized data. (Refer to “1. Initializing the E, F, 7 Page Data”.)
Fixed data-2: Modified data. (Refer to “2. Modification of E, F, 7 Page Data”.)

Address	Initial value	Remark
00 to 1C		Fixed data-1
1D		Fixed data-2 (Modified data. Copy the data built in the same model.)
1E		
1F		
20		
21 to 22		Fixed data-1
23	80	Mechanical shutter adj.
24	80	
25	80	
26	80	
27 to 3C		Fixed data-1
3D		Fixed data-2
3E to 5F		Fixed data-1

Table. 5-1-8.

1-3. CAMERA SYSTEM ADJUSTMENTS

Before perform the camera system adjustments, check that the specified values of "VIDEO SYSTEM ADJUSTMENT" are satisfied.

1. 36MHz Origin Oscillation Adjustment (VC-260 board)

Set the frequency of the clock for synchronization.
If deviated, the synchronization will be disrupted and the color will become inconsistent.

Subject	Not required
Measurement Point	Pin ⑯ of IC303
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	12
Specified Value	f=18000000 ± 90Hz

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	F	12		Change the data and set the frequency (f) to the specified value.
3	F	12		Press PAUSE button.
4	0	01	00	Set the data.

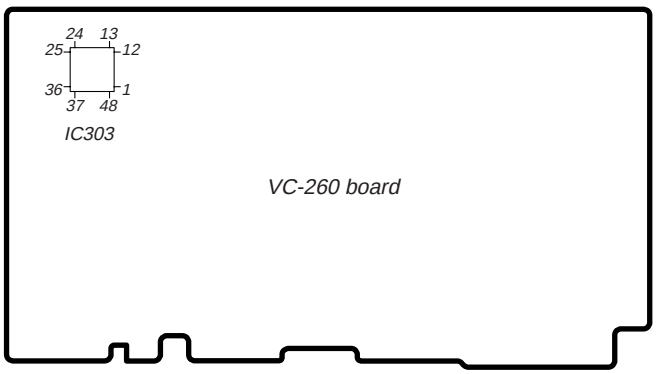


Fig. 5-1-6.

2. HALL Adjustment RadarW

For detecting the position of the lens iris, adjust AMP gain and offset.

Subject	Not required
Measurement Point	Display data of page 1 (Note1)
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	17, 18, 19
Specified Value 1	14 to 18
Specified Value 2	85 to 89

Note1: Displayed data of page 1 of the adjustment remote commander.
1 : XX : XX
└── IRIS display data

Switch setting:
POWER ..... CAMERA

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	94	16	Set the data.
3	6	95	87	Set the data.
4	6	01	6D	Set the data, and press PAUSE button.
5	6	02		Check that the data changes to "01". (Note2)
6	6	01	00	Set the data, and press PAUSE button.

Note2: The adjustment data will be automatically input to page: F, address: 17, 18, 19.

Checking method:

Order	Page	Address	Data	Procedure
1	6	04	03	Set the data.
2	6	01	01	Set the data, and press PAUSE button.
3	1			Check that the IRIS display data (Note1) satisfies the specified value 1.
4	6	01	03	Set the data, and press PAUSE button.
5	1			Check that the IRIS display data (Note1) satisfies the specified value.2.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	6	94	00	Set the data.
2	6	95	00	Set the data.
3	6	01	00	Set the data, and press PAUSE button.
4	6	04	00	Set the data.
5	0	01	00	Set the data.

3. Flange Back Adjustment RadarW (Using Minipattern Box)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Subject	Siemens star chart with ND filter for the minipattern box (Note1)
Measurement Point	Display data of page: F, address: 5F
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	4A to 51, 5A to 5F
Specified Value	Upper digit: 0 to B Lower digit: 0 to 9

Note1: Dark Siemens star chart.
Note2: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Switch setting:

1) POWER ..... CAMERA
2) NIGHT SHOT ..... OFF

Preparations:

1) The minipattern box is installed as shown in the following figure.
   Note: The attachment lenses are not used.
2) Install the minipattern box so that the distance between it and the front of the lens of the camcorder is less than 3cm.
3) Make the height of the minipattern box and the camcorder equal.
4) Check that the output voltage of the regulated power supply is the specified voltage.
5) Check that at both the zoom lens TELE end and WIDE end, the center of the Siemens star chart and center of the exposure screen coincide.

Specified voltage: The specified voltage varies according to the minipattern box, so adjust the power supply output voltage to the specified voltage written on the sheet which is supplied with the minipattern box.

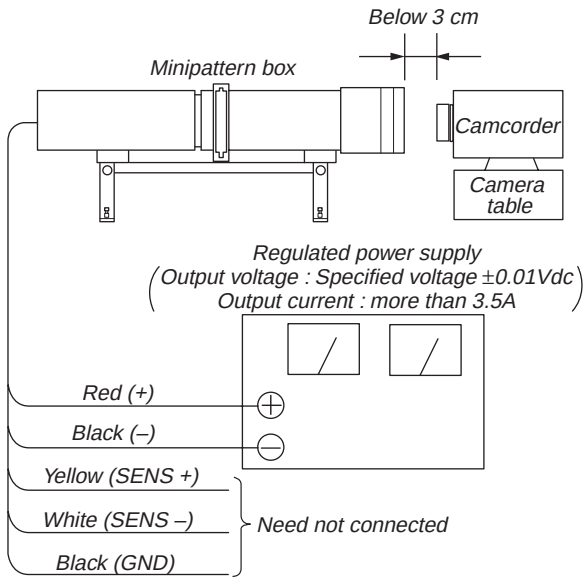


Fig. 5-1-7.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	01	13	Set the data, and press PAUSE button.
3	6	01	27	Set the data, and press PAUSE button.
4	6	02		Check that the data changes to "01". (Note3)
5	F	5F		Check that the upper digit of the data is "0" to "B".
6	F	5F		Check that the lower digit of the data is "0" to "9".

Note3: The adjustment data will be automatically input to page: F, address: 4A to 51, 5A to 5F.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	0	01	00	Set the data.
3				Perform "Flange Back Check".

4. Flange Back Adjustment RadarW (Using Flange Back Adjustment Chart and Subject More Than 500m Away)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

4-1. Flange Back Adjustment (1)

Subject	Flange back adjustment chart (2.0 m from the front of the protection glass) (Luminance: 350 ± 30 lux)
Measurement Point	Display data of page: F, address: 5F
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	4A to 51, 5A to 5F
Specified Value	Upper digit: 0 to B Lower digit: 0 to 9

Note1: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Switch setting:

1) POWER ..... CAMERA
2) NIGHT SHOT ..... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	01	13	Set the data, and press PAUSE button.
3	6	01	15	Set the data, and press PAUSE button.
4	6	02		Check that the data changes to "01". (Note2)
5	F	5F		Check that the upper digit is "0" to "B".
6	F	5F		Check that the lower digit is "0" to "9".

Note2: The adjustment data will be automatically input to page: F, address: 4A to 51, 5A to 5F.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2				Perform "Flange Back Adjustment (2)"

4-2. Flange Back Adjustment (2)

Perform this adjustment after performing "Flange Back Adjustment (1)".

Subject	Subject more than 500m away (Subjects with clear contrast such as buildings, etc.)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	4A to 51, 5A to 5F

Note1: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.

Switch setting:

1) POWER ..... CAMERA
2) NIGHT SHOT ..... OFF

Preparations:

1) Set the zoom lens to the TELE end and expose a subject that is more than 500m away (subject with clear contrast such as building, etc.). (Nearby subjects less than 500m away should not be in the screen.)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	01	13	Set the data, and press PAUSE button.
				Place a ND filter on the lens so that the optimum image is obtain.
3	6	01	29	Set the data, and press PAUSE button.
4	6	02		Check that the data changes to "01". (Note2)

Note2: The adjustment data will be automatically input to page: F, address: 4A to 51, 5A to 5F.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	0	01	00	Set the data.
3				Perform "Flange Back Check".

5. Flange Back Check

Subject	Siemens star (2.0m from the front of the lens) (Luminance : approx. 200 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Specified Value	Focused at the TELE end and WIDE end.

Switch setting:

1) POWER ..... CAMERA
2) NIGHT SHOT ..... OFF
3) DIGITAL ZOOM (Menu display) ..... OFF
4) STEADY SHOT (Menu display) ..... OFF

Note: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on the page 1 of the adjustment remote commander.
1) Select page: 6, address: 04, and set data: 0F.
2) Page 1 shows the state of the focus.

1 : 00 : XX
- Odd: Focused
- Even: Unfocused

Checking method:

1) Place the Siemens star 2.0m from the front of the lens.
2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appear on the image.
3) Shoot the Siemens star with the zoom TELE end.
4) Turn on the auto focus.
5) Check that the lens is focused (Note).
6) Select page: 6, address: 21, and set data: 10.
7) Shoot the Siemens star with the zoom WIDE end.
8) Observe the TV monitor and check that the lens is focused.

Processing after Completing Adjustments:

1) Select page: 6, address: 21, and set data: 00.
2) Select page: 6, address: 04, and set data: 00.

6. Optical Axis Adjustment

Align the lens Optical Axis with that of the CCD imager. If deviated, center of picture can lose focus when zoom is operated from the WIDE end to the TELE end.

Subject	Siemens star	
Measurement Point	Check on the monitor TV	
Measuring Instrument		
Adjustment Page	F	E
Adjustment Address	69	D0, DE

Switch setting:

1) POWER ..... CAMERA

Preparations before adjustments:

1) Playback the monoscope segment of the system check tape (XH5-5).
2) Attach the optical axis frame chart (transparent) on the monitor TV screen. Center of monoscope image and that that of optical axis frame must be agree.
3) Set to the camera mode.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 6, address: 40, and set data: 02.
3) Select page: 6, address: 41, and set data: 01.
4) Input the data of Table 5-1-9 to each adjustment addresses.
   Note: Press the PAUSE button each time to set the data.

Page: F	Page: E	
Address: 69	Address: D0	Address: DE
00	22	5F

Table. 5-1-9.

5) Place the Siemens star 2.0 m away from the front of the lens.
6) Shoot the Siemens star with the zoom TELE end.
7) Point the lens toward the Siemens star chart until center of the Siemens star is located in the center of the optical axis frame.
8) Shoot the Siemens star with the zoom WIDE end.
9) Measure on the monitor TV screen in which area of the optical axis frame the center of the Siemens star is located. Measure the amount of displacement (distance between the center of the Siemens star and the center of the optical axis frame.) The measurement value is named L1.
10) Read the correction data corresponding to the area from Table 5-1-10.
11) Input the correction data to each adjustment address.
    Note: Press the PAUSE button each time to set the data.
12) Shoot the Siemens star with the zoom TELE end.
13) Point the lens toward the Siemens star chart until center of the Siemens star is located in the center of the optical axis frame.
14) Shoot the Siemens star with the zoom WIDE end.
15) Measure the amount of displacement (distance between the center of the Siemens star and the center of the optical axis frame.) The measurement value is named L2.
16) Compare the values L1 and L2, and confirm that L2 is smaller than L1. If L2 is lager than L1, input the data of Table 5-1-9 to each adjustment address.
    Note: Press the PAUSE button each time to set the data.

Area	Display phase	Connection data		
		Page: F	Page: E	
		Address: 69	Address: D0	Address: DE
1	22.6° to 67.5°	01	22	57
2	67.6° to 112.5°	02	22	5F
3	112.6° to 157.5°	03	22	67
4	157.6° to 202.5°	04	02	69
5	202.6° to 247.5°	05	22	67
6	247.6° to 292.5°	06	22	5F
7	292.6° to 337.5°	07	22	57
8	337.6° to 22.5°	08	02	55

Table. 5-1-10.

Processing after Completing Adjustments:

1) Select page: 0, address: 01, and set data: 00.
2) Select page: 6, address: 40, and set data: 00.
3) Select page: 6, address: 41, and set data: 00.

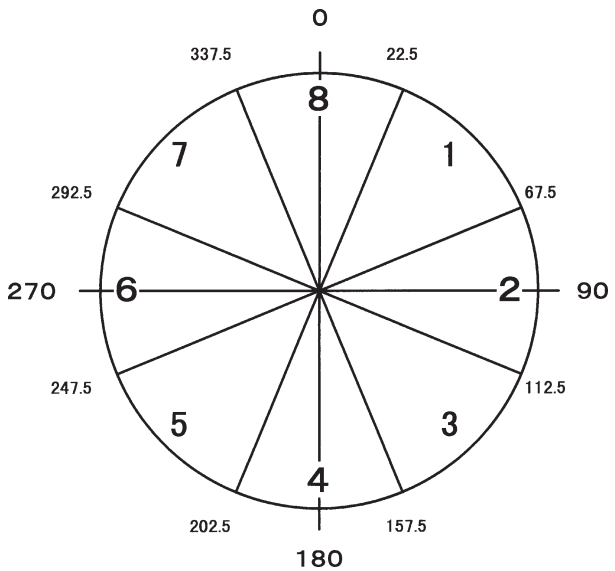


Fig. 5-1-8.

7. Picture Frame Setting

Subject	Color bar chart (Color reproduction adjustment frame) (1.5m from the front of the lens)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor
Specified Value	A=B, C=D, E=F

Switch setting:

1) POWER ..... CAMERA
2) NIGHT SHOT ..... OFF
3) DIGITAL ZOOM (Menu display) ..... OFF
4) STEADY SHOT (Menu display) ..... OFF

Setting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 69, after noting down the data, set data: 00, and press the PAUSE button.
3) Adjust the zoom and the camera direction, and set to the specified position.
4) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using “Color reproduction adjustment frame”.

Processing after Completing Camera System Adjustments:

After completing the camera system adjustments, release the data settings.

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 69, set the data noted down at step 2), and press the PAUSE button.
3) Select page: 0, address: 01, and set data: 00.

Check on the oscilloscope

1. Horizontal period

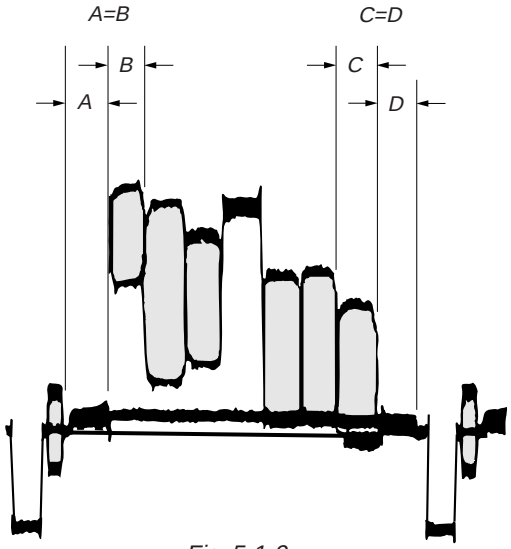


Fig. 5-1-9.

2. Vertical period

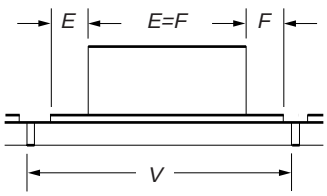


Fig. 5-1-10.

Check on the monitor TV (Underscanned mode)

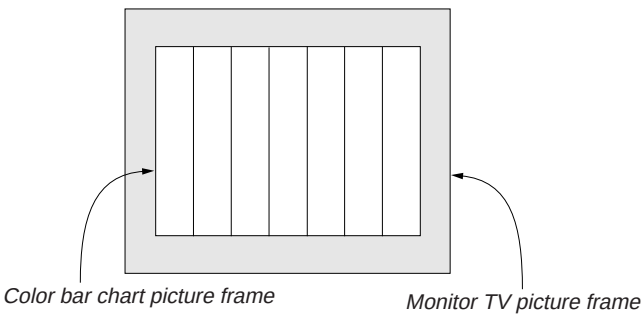


Fig. 5-1-11.

8. Color Reproduction Adjustment

Adjust the color Separation matrix coefficient so that proper color reproduction is produced.

Subject	Color bar chart (Color reproduction adjustment frame)
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	35, 37, 3C, 3D
Specified Value	All color luminance points should settle within each color reproduction frame.

Switch setting:

1) POWER ..... CAMERA
2) NIGHT SHOT ..... OFF
3) DIGITAL ZOOM (Menu display) ..... OFF
4) STEADY SHOT (Menu display) ..... OFF

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 8E, set data: 29, and press the PAUSE button.
3) Select page: F, address: C0, set data: 37 and press the PAUSE button.
4) Select page: 6, address: 01, set data: 3D, and press the PAUSE button.
5) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
6) Change the data of page: F, address: 35, 37, 3C and 3D, and settle each color luminance point in each color reproduction frame.

   Note: Be sure to press the PAUSE button of the adjustment remote commander before changing the addresses. If not, the new data will not be written to the memory.

Processing after Completing Adjustments:

1) Select page: F, address: 8E, set data: 2E, and press the PAUSE button.
2) Select page: 6, address: 01, set data: 00, and press the PAUSE button.
3) Select page: 0, address: 01, and set data: 00.

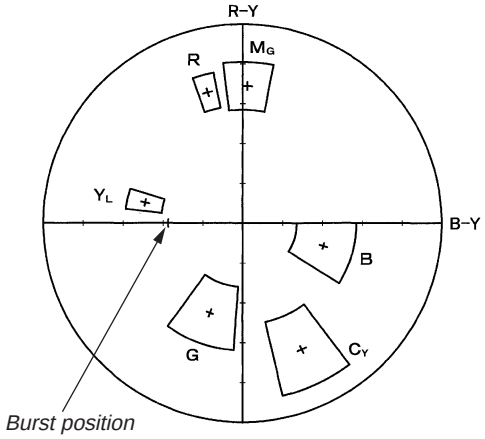


Fig. 5-1-12.

9. MAX GAIN Adjustment RadarW

Setting the minimum illumination.
If it is not consistent, the image level required for taking subjects in low illuminance will not be produced (dark).

Subject	Clear chart (Color reproduction adjustment frame)
Adjustment Page	F
Adjustment Address	1D

Switch setting:

1) POWER ..... CAMERA
2) NIGHT SHOT ..... OFF
3) STEADY SHOT (Menu display) ..... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	96	00	Set the data.
3	6	97	1E	Set the data.
4	6	01	6F	Set the data, and press PAUSE button.
5	6	02		Check that the data changes to "01". (Note)

Note: The adjustment data will be automatically input to page: F, address: 1D

Processing after Completing Adjustments

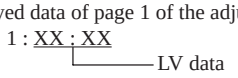
Order	Page	Address	Data	Procedure
1	6	96	00	Set the data.
2	6	97	00	Set the data.
3	6	01	00	Set the data, and press PAUSE button.
4	0	01	00	Set the data.

10. Auto White Balance & LV Standard Data Input RadarW

Adjust the white balance reference at 3200K, and adjust the normal coefficient of the light value.

Subject	Clear chart (Color reproduction adjustment frame)
Measurement Point	Display data of page 1 (Note4)
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	1E, 1F, 30 to 33
Specified Value	0FE0 to 1020

Note1: This adjustment should be carried out upon completion of " Color reproduction Adjustment".
Note2: After the power is turned on, this adjustment can be done only once.
Note3: Check that the data of page: 6, address: 02 is "00". If not, to page: 6, address: 01, set data: 00, and press the PAUSE button.
Note4: Displayed data of page 1 of the adjustment remote commander.



Switch setting:

1) POWER ..... CAMERA
2) NIGHT SHOT ..... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	6	01	11	Set the data, and press PAUSE button.
3	6	01	0D	Set the data, and press PAUSE button.
4	6	02		Check that the data changes to "01". (Note5)
5	F	10	2E	Set the data, and press PAUSE button.
6	1			Check that the display data (Note4) satisfies the specified value.

Note5: The adjustment data will be automatically input to page: F, address: 1E, 1F, 30 to 33.

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	F	10	00	Set the data, and press PAUSE button.
3	0	01	00	Set the data.
4				Perform "Auto White Balance Adjustment".

11. Auto White Balance Adjustment RadarW

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Measurement Point	Display data of page 1 (Note3)
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	40, 41
Specified Value	R ratio: 2C50 to 2D50 B ratio: 5C00 to 5D00

Note1: After the power is turned on, this adjustment can be done only once.
Note2: Perform "Auto White Balance & LV Standard Data Input" before this adjustment.
Note3: Displayed data of page 1 of the adjustment remote commander.

1 : XX : XX
└──── Display data

Switch setting:

1) POWER ..... CAMERA
2) NIGHT SHOT ..... OFF
3) DIGITAL ZOOM (Menu display) ..... OFF

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter for color temperature correction on the lens.
2	0	01	01	Set the data.
3	F	42		Write down the data.
4	F	42	2C	Set the data, and press PAUSE button.
5	F	43		Write down the data.
6	F	43	D0	Set the data, and press PAUSE button.
7	F	44		Write down the data.
8	F	44	5C	Set the data, and press PAUSE button.
9	F	45		Write down the data.
10	F	45	80	Set the data, and press PAUSE button.
11	6	01	83	Set the data, and press PAUSE button.
12	6	01	81	Set the data, and press PAUSE button.
13	6	02		Check that the data changes to "01". (Note4)
14	6	01	3F	Set the data, and press PAUSE button.
15	6	04	04	Set the data.
16	1			Check that the display data (Note3) satisfies the R ratio specified value.
17	6	04	05	Set the data.
18	1			Check that the display data (Note3) satisfies the B ratio specified value.

Note4: The adjustment data will be automatically input to page: F, address: 40, 41.

Processing after Completing Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	6	04	00	Set the data.
3	F	42		Set the data that is written down at step 3, and press PAUSE button.
4	F	43		Set the data that is written down at step 5, and press PAUSE button.
5	F	44		Set the data that is written down at step 7, and press PAUSE button.
6	F	45		Set the data that is written down at step 9, and press PAUSE button.
7	0	01	00	Set the data.

12. White Balance Check

Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.4 and 0.1
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 5-1-13. A to B

Switch setting:

1) POWER ..... CAMERA
2) NIGHT SHOT ..... OFF
3) DIGITAL ZOOM (Menu display) ..... OFF

Checking method:

Order	Page	Address	Data	Procedure
				Indoor white balance check
1				Check that the lens is not covered with either filter.
2	6	01	0F	Set the data, and press PAUSE button.
3				Check that the center of the white luminance point is within the circle shown Fig. 5-1-13. A.
				Outdoor white balance check
4	6	01	3F	Set the data, and press PAUSE button.
5				Place the C14 filter on the lens.
6				Check that the center of the white luminance point is within the circle shown Fig. 5-1-13. B.
7				Remove the C14 filter.
				Indoor white balance data check
8	6	01	00	Set the data, and press PAUSE button.
9				Place the ND filter 1.5 (1.0+0.1+ 0.4) on the lens.
10	0	01	01	Set the data.
11	F	10	A9	Set the data, and press PAUSE button.
12	1			Check that the display data (Note) satisfies the specified value. Specified value: 0000 to 0BC0
13	F	10	A1	Set the data, and press PAUSE button.
14	1			Check that the second digit of the display data (Note) is "1". Specified value: 1 : XX : XX "1"

Note: Displayed data of the adjustment remote commander.

1 : XX : XX
Display data

Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	6	01	00	Set the data, and press PAUSE button.
2	F	10	00	Set the data, and press PAUSE button.
3	0	01	00	Set the data.

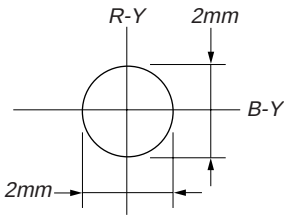


Fig. 5-1-13. (A)

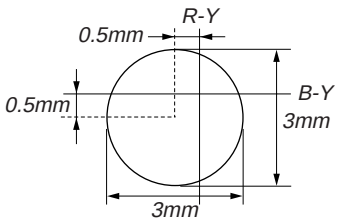


Fig. 5-1-13. (B)

13. Mechanical Shutter Adjustment RadarW (DCR-TRV17)

Adjust the period which the mechanical shutter is closed, and compensate the exposure.

Adjustment Page	F	7
Adjustment Address	70 to 84	23 to 26

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Input the following data to page: F, addresses: 70 to 84.
   Note: Press the PAUSE button of the adjustment remote commander each time to set the data.

Address	Data
70	5F
71	0F
72	8B
73	0C
74	F4
75	0A
76	B0
77	09
78	B1
79	08
7A	55
7B	44
7C	55
7D	75
7E	55
7F	81
80	55
81	82
82	55
83	73
84	1A

3) Input the following data to page: 7, addresses: 23 to 26.
   Note: Press the PAUSE button of the adjustment remote commander each time to set the data.

Address	Data
23	AC
24	B0
25	B2
26	B9

4) Select page: 0, address: 01, and set data: 00.

14. Angular Velocity Sensor Sensitivity Adjustment

- This adjustment is performed only when replacing the angular velocity sensor.
  Although this adjustment need not be performed when the circuit is damaged, etc., check the operations.
- Note down the sensitivity displayed on the angular velocity sensor of the repair parts. At this time, note down also to which board it was attached to.
  Be sure to check because if attached incorrectly, the screen will vibrate up and down or left and right during hand-shake correction operations.

Precautions on the Parts Replacement

There are two types of repair parts.

Type A: ENC03JA
Type B: ENC03JB

Replace the broken sensor with a same type sensor. If replace with other type parts, the image will vibrate up and down or left and right during hand-shake correction operations. After replacing, re-adjust according to the adjusting method after replacement.

Precautions on Angular Velocity Sensor

The sensor incorporates a precision oscillator. Handle it with care as if it dropped, the balance of the oscillator will be disrupted and operations will not be performed properly.

Adjustment Page	F
Adjustment Address	66, 67

Note1: The sensor sensitivity of SE3101 and SE3102 of the JK-204 board is written only on the repair parts.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Read the sensor sensitivity written on SE3102 (PITCH sensor) of the JK-204 board, and take this as S_{3102}.
3) Read the sensor sensitivity written on SE3101 (YAW sensor) of the JK-204 board, and take this as S_{3101}.
4) Calculate D_{66}' and D_{67}' using the following equation (decimal calculation).
   $D_{66}' = 57 / S_{3102}$
   $D_{67}' = 65 / S_{3101}$
5) Convert D_{66}' and D_{67}' into hexadecimal digits, to obtain D_{66} and D_{67}. (Round off decimal points)
6) Select page: F, address: 66, set data: D_{66}, and press the PAUSE button of the adjustment remote commander.
7) Select page: F, address: 67, set data: D_{67}, and press the PAUSE button of the adjustment remote commander.

Processing after Completing Adjustments

1) Select page: 0, address: 01, and set data: 00.
2) Check that the steady shot operations have been performed normally.

1-4. COLOR ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT

Note1: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

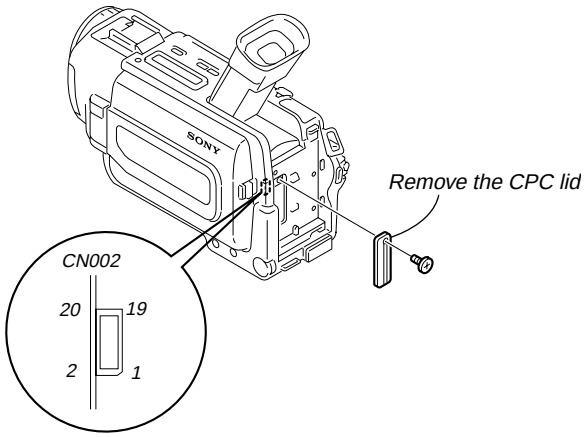
Note2: As the PANEL CLOSE switch is attached to the cabinet (R), this cabinet must be attached when performing adjustments.
If you perform the adjustments with cabinet (R) removed, set the following data.
1) Select page: 2, address: 0E, and set data: 67.
2) Select page: 2, address: 0F, and set data: 01.
Reset the data after completing adjustment.
1) Select page: 2, address: 0E, and set data: 00.
2) Select page: 2, address: 0F, and set data: 00.

[Adjusting connector]

Most of the measuring points for adjusting the viewfinder system are concentrated in CN002 of the VC-260 board.
Connect the Measuring Instruments via the CPC-8 jig (J-6082-388-A).
The following table shows the Pin No. and signal name of CN002.

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	2	EVF BL+
3	EVF BL–	4	EVF VG
5	EVF VCO	6	GND
7	PANEL VG	8	PD VCO
9	H START	10	XHD/PSIG
11	PANEL COM	12	TMS
13	TCK	14	JIG TDI
15	JIG TDO	16	GND
17	SWP	18	RF IN/LANC JACK IN
19	GND	20	RF MON

Table 5-1-9.



1. VCO Adjustment (VC-260 board)

Set the VCO free-run frequency. If deviated, the EVF screen will be blurred.

Mode	Camera
Subject	Arbitrary
Measurement Point	Pin ⑤ of CN002 (EVF VCO)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	92, 93
Specified Value	f = 15734 ± 30Hz

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	92		Change the data and set the VCO frequency (f) to the specified value.
3	D	92		Press PAUSE button.
4	D	92		Read the data, and this data is named D_{92}.
5				Convert D_{92} to decimal notation, and obtain D_{92}'. (Note)
6				Calculate D_{93}' using following equations (Decimal calculation) When $D_{92}' \leqq 231$ $D_{93}' = D_{92}' + 24$ When $D_{92}' > 231$ $D_{93}' = 255$
7				Convert D_{93}' to a hexadecimal number, and obtain D_{93}. (Note)
8	D	93	D_{93}	Set the data, and press PAUSE button.
9	0	01	00	Set the data.

Note: Refer to "Table 5-4-1. Hexadecimal-decimal Conversion Table".

2. RGB AMP Adjustment (VC-260 board)

Set the D range of the RGB decoder used to drive the LCD to the specified value. If deviated, the LCD screen will become blackish or saturated (whitish).

Mode	Camera
Subject	Arbitrary
Measurement Point	Pin ④ of CN002 (EVF VG)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	95
Specified Value	A = 7.0 ± 0.1V

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	95		Change the data and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value.
3	D	95		Press PAUSE button.
4	0	01	00	Set the data.

3. Contrast Adjustment (VC-260 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	Camera
Subject	Arbitrary
Measurement Point	Pin ④ of CN002 (EVF VG)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	99
Specified Value	A=2.4 ± 0.1V

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	99		Change the data and set the voltage (A) between the 3 steps peak and pedestal to the specified value. (The data should be “00” to “7F”.)
3	D	99		Press PAUSE button.
4	0	01	00	Set the data.

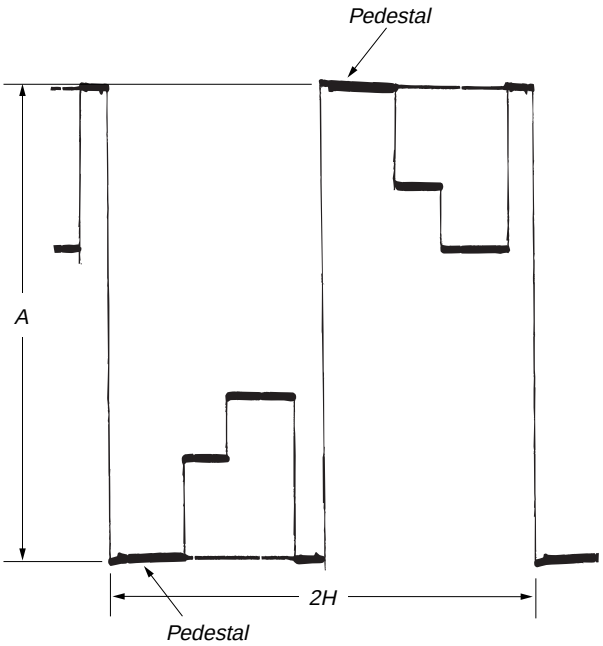


Fig. 5-1-14.

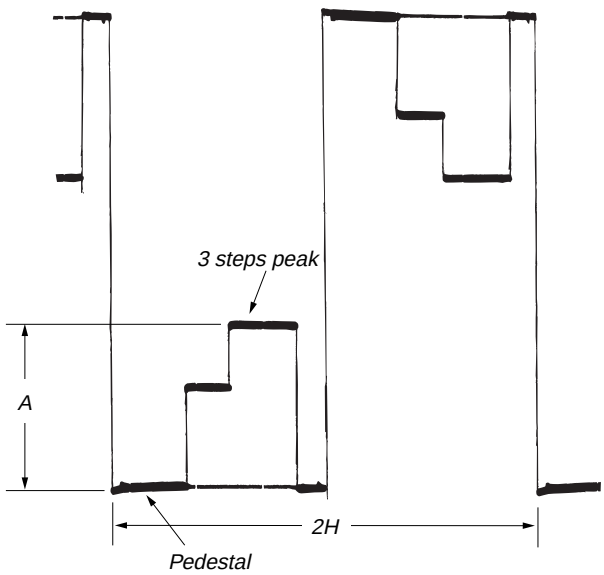


Fig. 5-1-15.

4. Backlight Adjustment (VC-260 board)

Set the backlight luminance.
If deviated, the image may become dark or bright.

Mode	Camera
Subject	Arbitrary
Measurement Point	Pin ② of CN002 (EVF BL+)
Measuring Instrument	Digital voltmeter
Adjustment Page	D
Adjustment Address	90, 91
Specified Value	NORMAL mode : A=1.10 ± 0.05Vdc BRIGHT mode : B=2.10 ± 0.05Vdc

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	90		Change the data and set the voltage (A) of Pin ② of CN002 to the specified value of NORMAL mode.
3	D	90		Press PAUSE button.
4	D	91		Change the data and set the voltage (B) of Pin ② of CN002 to the specified value of BRIGHT mode.
5	D	91		Press PAUSE button.
6	0	01	00	Set the data.

5. White Balance Adjustment (VC-260 board)

Correct the white balance.
If deviated, the reproduction of the EVF screen may degenerate.

Mode	Camera
Subject	Arbitrary
Measurement Point	Check on EVF screen
Measuring Instrument	
Adjustment Page	D
Adjustment Address	97, 98
Specified Value	The EVF screen should not be colored.

Note1: Check the white balance only when replacing the following parts. If necessary, adjust them.
1. LCD panel
2. Light induction plate
3. IC1801

Note2: Use the AC power adapter.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	97	7E	Set the data, and press PAUSE button.
3	D	98	80	Set the data, and press PAUSE button.
4	D	98		Check that the EVF screen is not colored. If not colored, proceed to step 10.
5	D	97		Change the data so that the EVF screen is not colored.
6	D	97		Press PAUSE button.
7	D	98		Change the data so that the EVF screen is not colored.
8	D	98		Press PAUSE button.
9	D	98		If the EVF screen is colored, repeat steps 5 to 9.
10	0	01	00	Set the data.

1-5. LCD SYSTEM ADJUSTMENT

Note 1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note 2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

Switch setting:

LCD BRIGHT ..... Center.

[Adjusting connector]

Most of the measuring points for adjusting the viewfinder system are concentrated in CN5502 of the PD-143 board.

Connect the Measuring Instruments via the multi CPC jig (J-6082-311-A).

The following table shows the Pin No. and signal name of CN5502.

Pin No.	Signal Name	Pin No.	Signal Name
1	VB	2	XVD OUT
3	VG	4	PANEL COM
5	VR	6	MAKER CHECK
7	XHD	8	XHD OUT
9	GND	10	GND

Table 5-1-10.

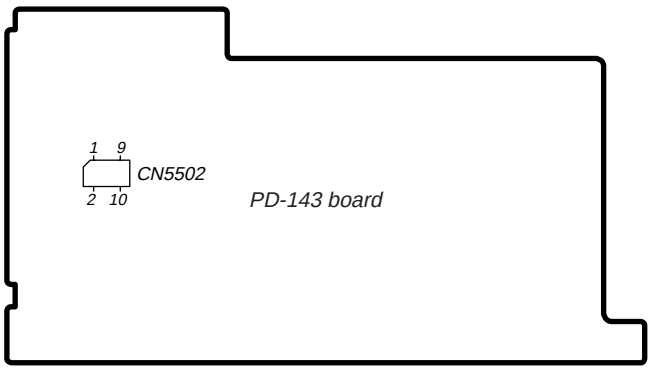


Fig. 5-1-16.

1. LCD Type Check

By measuring the resistor value between Pin ⑥ of CN5502 and GND, the type of LCD can be discriminated.

Resistor value	2.2kΩ	5.6kΩ	6.8kΩ
LCD type	2.5 LCD TYPE S	3.5 LCD TYPE S	3.5 LCD TYPE C
DCR-	TRV15	TRV17	TRV17

Table 5-1-11.

2. VCO Adjustment (PD-143 board)

Set the VCO free-run frequency. If deviated, the LCD screen will be blurred.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ⑧ of CN5502 (XHD OUT)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	A2, A3
Specified Value	f = 15734 ± 30Hz

Note1: Refer to "LCD Type Check" for the discrimination of the LCD type.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	A2		Change the data and set the VCO frequency (f) to the specified value.
3	D	A2		Press PAUSE button.
4	D	A2		Read the data, and this data is named D_{A2}.
5				Convert D_{A2} to decimal notation, and obtain D_{A2}'. (Note2)
6				Calculate D_{A3}' using following equations (Decimal calculation) [2.5 LCD TYPE] When D_{A2}' ≦ 230 D_{A3}' =D_{A2}'+25 When D_{A2}' >230 D_{A3}' =255 [3.5 LCD TYPE] When D_{A2}' ≦ 246 D_{A3}' =D_{A2}'+9 When D_{A2}' >246 D_{A3}' =255
7				Convert D_{A3}' to a hexadecimal number, and obtain D_{A3}. (Note2)
8	D	A3	D_{A3}	Set the data, and press PAUSE button.
9	0	01	00	Set the data.

Note2: Refer to "Table 5-4-1. Hexadecimal-decimal Conversion Table".

3. RGB AMP Adjustment (PD-143 board)

Set the D range of the RGB decoder used to drive the LCD to the specified value. If deviated, the LCD screen will become blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ③ of CN5502 (PANEL VG) External trigger: Pin ④ of CN5502 (PANEL COM)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	A5
Specified Value	A = 3.59 ± 0.05V (LCD TYPE S) A = 3.20 ± 0.05V (LCD TYPE C)

Note: Refer to "LCD Type Check" for the discrimination of the LCD type.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	A5		Change the data and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value. (The data should be "00" to "3F")
3	D	A5		Press PAUSE button.
4	0	01	00	Set the data.

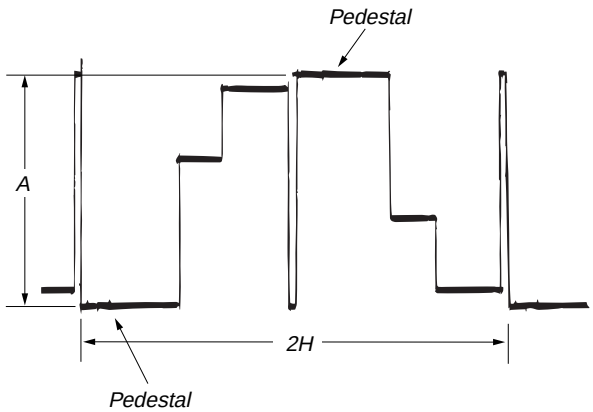


Fig. 5-1-17.

4. Contrast Adjustment (PD-143 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ③ of CN5502 (PANEL VG) External trigger: Pin ④ of CN5502 (PANEL COM)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	AA
Specified Value	A = 3.34 ± 0.07V (LCD TYPE S) A = 3.00 ± 0.07V (LCD TYPE C)

Note: Refer to "LCD Type Check" for the discrimination of the LCD type.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	AA		Change the data and set the voltage (A) between the 100 IRE and 0 IRE (pedestal) to the specified value. (The data should be "00" to "7F".)
3	D	AA		Press PAUSE button.
4	0	01	00	Set the data.

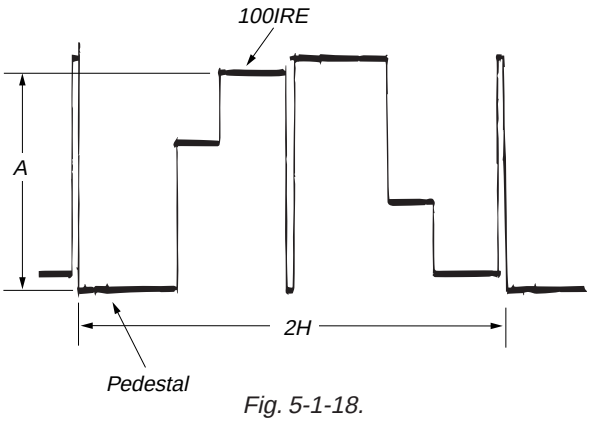


Fig. 5-1-18.

5. COM AMP Adjustment (PD-143 board)

Set the common electrode drive signal level of LCD to the specified value.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ④ of CN5502 (PANEL COM)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	A7
Specified Value	2.5 LCD TYPE S A = 6.33 ± 0.05V 3.5 LCD TYPE S A = 6.10 ± 0.05V 3.5 LCD TYPE C A = 5.50 ± 0.05V

Note: Refer to "LCD Type Check" for the discrimination of the LCD type.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	A7		Change the data and set the PANEL COM signal level (A) to the specified value.
3	D	A7		Press PAUSE button.
4	0	01	00	Set the data.

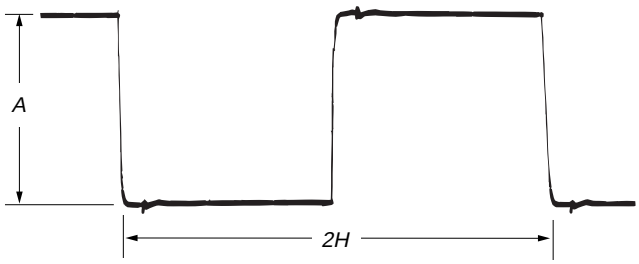


Fig. 5-1-19.

6. V-COM Adjustment (PD-143 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.
If deviated, the LCD display will move, producing flicker and conspicuous vertical lines.

Mode	VTR stop
Signal	No signal
Measurement Point	Check on LCD display
Measuring Instrument	
Adjustment Page	D
Adjustment Address	A4
Specified Value	The brightness difference between the section A and section B is minimum.

Note: This adjustment should be carried out upon completion of the following adjustments.
RGB AMP adjustment
Contrast adjustment
V COM level adjustment

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	A4		Change the data so that the brightness of the section A and that of the section B is equal.
3	D	A4		Subtract 8 from the data.
4	D	A4		Press PAUSE button.
5	0	01	00	Set the data.

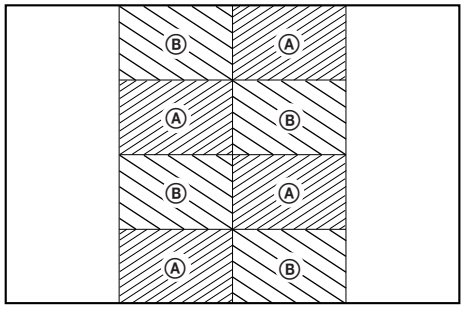


Fig. 5-1-21.

7. White Balance Adjustment (PD-143 board)

Correct the white balance.
If deviated, the reproduction of the LCD screen may degenerate.

Mode	VTR stop
Signal	No signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	D
Adjustment Address	A8, A9
Specified Value	The LCD screen should not be colored.

Note1: Check the white balance only when replacing the following parts. If necessary, adjust them.
1. LCD panel
2. Light induction plate
3. IC5501

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	D	A8	80	Set the data, and press PAUSE button.
3	D	A9	80	Set the data, and press PAUSE button.
4	D	A9		Check that the LCD screen is not colored. If not colored, proceed to step 10.
5	D	A8		Change the data so that the LCD screen is not colored.
6	D	A8		Press PAUSE button.
7	D	A9		Change the data so that the LCD screen is not colored.
8	D	A9		Press PAUSE button.
9	D	A9		If the LCD screen is colored, repeat steps 5 to 9.
10	0	01	00	Set the data.

5-2. MECHANISM SECTION ADJUSTMENT

On the mechanism section adjustment

For details of mechanism section adjustments, checks, and replacement of mechanism parts, refer to the separate volume "DV MECHANICAL ADJUSTMENT MANUAL Ⅵ J Mechanism ".

2-1. HOW TO ENTER RECORD MODE WITHOUT CASSETTE

1) Connect the adjustment remote commander to the LANC jack.
2) Turn the HOLD switch of the adjustment remote commander to the ON position.
3) Close the cassette compartment without the cassette.
4) Select page: 3, address: 01, set data: 0C, and press the PAUSE button of the adjustment remote commander.
   (The mechanism enters the record mode automatically.)
   Note: The function buttons become inoperable.
5) To quit the record mode, select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander. (Whenever you want to quit the record mode, be sure to quit following this procedure.)

2-2. HOW TO ENTER PLAYBACK MODE WITHOUT CASSETTE

1) Connect the adjustment remote commander to the LANC jack.
2) Turn the HOLD switch of the adjustment remote commander to the ON position.
3) Close the cassette compartment without the cassette.
4) Select page: 3, address: 01, set data: 0B, and press the PAUSE button of the adjustment remote commander.
   (The mechanism enters the playback mode automatically.)
   Note: The function buttons become inoperable.
5) To quit the playback mode, select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander. (Whenever you want to quit the playback mode, be sure to quit following this procedure.)

2-3. TAPE PATH ADJUSTMENT

1. Preparation for Adjustment

1) Clean the tape running side (tape guide, drum, capstan shaft, pinch roller, etc.).
2) Connect the adjustment remote commander to the LANC jack.
3) Turn the HOLD switch of the adjustment remote commander to the ON position.
4) Connect an oscilloscope to VC-260 board CN002 via the CPC-8 jig (J-6082-388-A).
   Channel 1: VC-260 board, CN002 Pin ⑳ (Note)
   External trigger: VC-260 board, CN002 Pin ⑰
   Note: Connect a 75 Ω resistor between pins ⑳ of CN002 and ⑲ (GND).
   75 Ω resistor (Parts code: 1-247-804-11)
5) Playback the alignment tape for tracking. (XH2-1)
6) Select page: 3, address: 33, and set data: 08.
7) Select page: 3, address: 26, and set data: 31.
8) Check that the oscilloscope RF waveform is normal at the entrance and exit.
   If not normal, adjust according to the separate volume "DV MECHANICAL ADJUSTMENT MANUAL Ⅵ J Mechanism" .

CN002 of VC-260 board

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	2	EVF BL +
3	EVF BL –	4	EVF VG
5	EVF VCO	6	GND
7	PANEL VG	8	PD VCO
9	H START	10	XHD/PSIG
11	PANEL COM	12	TMS
13	TCK	14	JIG TDI
15	JIG TDO	16	GND
17	SWP	18	RF IN/LANC JACK IN
19	GND	20	RF MON

2. Procedure after operations

1) Connect the adjustment remote commander to the LANC jack and set the HOLD switch to the ON position.
2) Select page: 3, address: 26, and set data: 00.
3) Select page: 3, address: 33, and set data: 00.

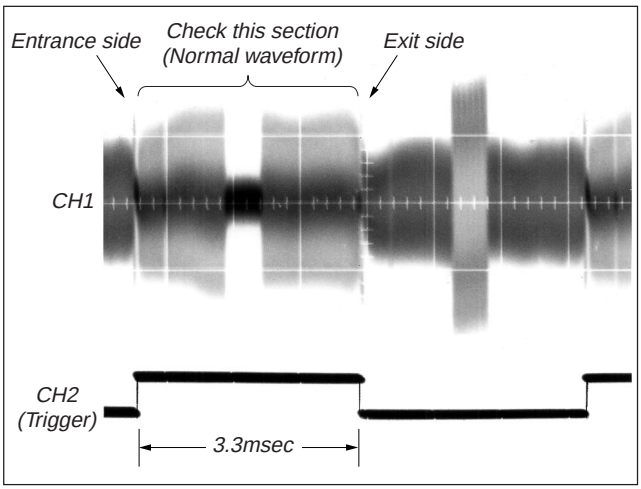


Fig. 5-2-1.

5-3. VIDEO SECTION ADJUSTMENTS

3-1. PREPARATIONS BEFORE ADJUSTMENTS

Use the following measuring instruments for video section adjustments.

3-1-1. Equipment Required

1) TV monitor
2) Oscilloscope (dual-phenomenon, band above 30 MHz with delay mode) (Unless specified otherwise, use a 10 : 1 probe.)
3) Frequency counter
4) Pattern generator with video output terminal.
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
10) Regulated power supply
11) Alignment tapes
    - Tracking standard (XH2-1)
      Parts code: 8-967-997-01
    - SW/OL standard (XH2-3)
      Parts code: 8-967-997-11
    - Audio operation check for NTSC (XH5-3)
      Parts code: 8-967-997-51
    - System operation check for NTSC (XH5-5)
      Parts code: 8-967-997-61
12) Adjustment remote commander (J-6082-053-B)
13) CPC-8 jig (J-6082-388-A)
14) IR receiver jig (J-6082-383-A)
15) Extension cable (100P, 0.5mm)(J-6082-352-A)(Note)
    For extension between the MS-070 board (CN1901) and the VC-260 board (CN011).
    Note: DCR-TRV17 model only.

3-1-2. Precautions on Adjusting

1) The adjustments of this unit are performed in the VTR mode or camera mode.
   To set to the VTR mode, set the power switch to "VCR" (or "PLAYER") or set the "Forced VTR Power ON mode" using the adjustment remote commander (Note 1).
   To set to the Camera mode, set the power switch to "CAMERA" or set the "Forced Camera Power ON mode" using the adjustment remote commander (Note 2).
   After completing adjustments, be sure to exit the "Forced VTR Power ON Mode" or "Forced Camera Power ON Mode". (Note 3)
2) The front panel block (Focus ring, Microphone unit., MA-403 board, FB-218 board) need not be assembled. To remove it, disconnect the following connector.
   VC-260 board CN008 (24P, 0.5mm)
3) Cabinet (R) (CK-101board, LCD block) need not be connected. But removing the cabinet (R) (removing the VC-260 board CN009) means removing the lithium 3V power supply (CK-101 board, BT8201) , data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the data of page: 2, address: A2 to AA (data on history of use) and the data of page: 2, address: B0 to C6 (self-diagnosis data). (Refer to "5-4.Service Mode" for the data on the history use and the self-diagnosis data.)
   To remove the cabinet (R), disconnect the following connectors.
   VC-260 board CN009 (18P, 0.5mm)
   VC-260 board CN005 (20P, 0.8mm)
4) Only for DCR-TRV17 model, to open the VC-260 board, use the following extension cable between the VC-260 board CN011 and MS-070 board CN1901.
   J-6082-352-A (100P, 0.5mm)
5) The lens block (CD-303 board) is need not be connected. To remove it, disconnect the following connectors.
   VC-260 board CN302 (16P, 0.5mm)
   VC-260 board CN004 (24P, 0.5mm)
6) By setting the "Forced VTR Power ON mode", the video section can be operate even if the control switch block (PS-1700) has been removed. When removing it, disconnect the following connector.
   VC-260 board CN012 (10P, 0.5mm)

Note 1: Setting the "Forced VTR Power ON" mode (VTR mode)
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 02, and press the PAUSE button of the adjustment remote commander.

The above procedure will enable the VTR power to be turned on with the control switch block (PS-1700 block) removed.
After completing adjustments, be sure to exit the "Forced Power ON mode".

Note 2: Setting the "Forced Camera Power ON" mode (Camera mode)
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjustment remote commander.

The above procedure will enable the camera power to be turned on with the control switch block (PS-1700 block) removed.
After completing adjustments, be sure to exit the "Forced Power ON mode".

Note 3: Setting the "Forced Memory Power ON" mode (Memory mode)
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 05, and press the PAUSE button of the adjustment remote commander.

The above procedure will enable the memory power to be turned on with the control switch block (PS-1700 block) removed.
After completing adjustments, be sure to exit the "Forced Power ON mode".

Note 4: Exiting the "Forced Power ON" mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
3) Select page: 0, address: 01, and set data: 00.

3-1-3. Adjusting Connectors

Some of the adjusting points of the video section are concentrated at VC-260 board CN002. Connect the measuring instruments via the CPC-8 jig (J-6082-388-A). The following table lists the pin numbers and signal names of CN002.

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	2	EVF BL +
3	EVF BL –	4	EVF VG
5	EVF VCO	6	GND
7	PANEL VG	8	PD VCO
9	H START	10	XHD/PSIG
11	PANEL COM	12	TMS
13	TCK	14	JIG TDI
15	JIG TDO	16	GND
17	SWP	18	RF IN/LANC JACK IN
19	GND	20	RF MON

Table 5-3-1.

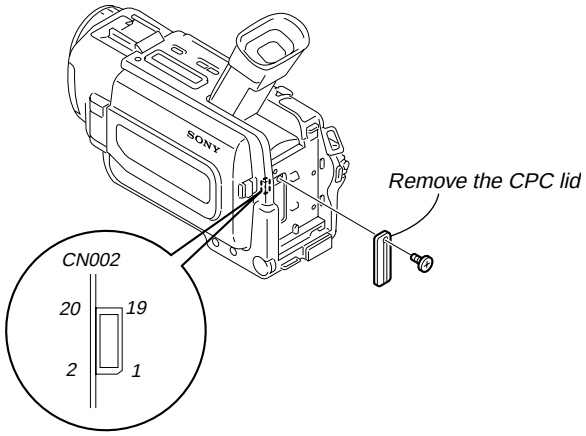


Fig. 5-3-1.

3-1-4. Connecting the Equipment

Connect the measuring instruments as shown in Fig. 5-3-2, and perform the adjustments.

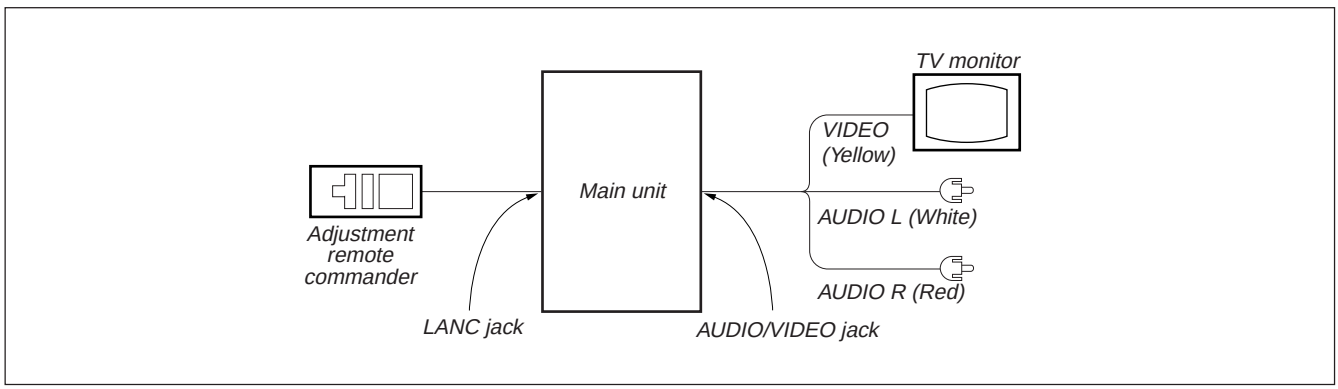


Fig. 5-3-2.

3-1-5. Alignment Tapes

Use the alignment tapes shown in the following table.
Use tapes specified in the signal column of each adjustment.

Name	Use
Tracking standard (XH2-1)	Tape path adjustment
SW/OL standard (XH2-3)	Switching position adjustment
Audio operation check (XH5-3)	Audio system adjustment
System operation check (XH5-5)	Operation check

Fig. 5-3-3 shows the 75% color bar signals recorded on the alignment tape for Audio Operation Check.

Note: Measure with video terminal (Terminated at 75 Ω)

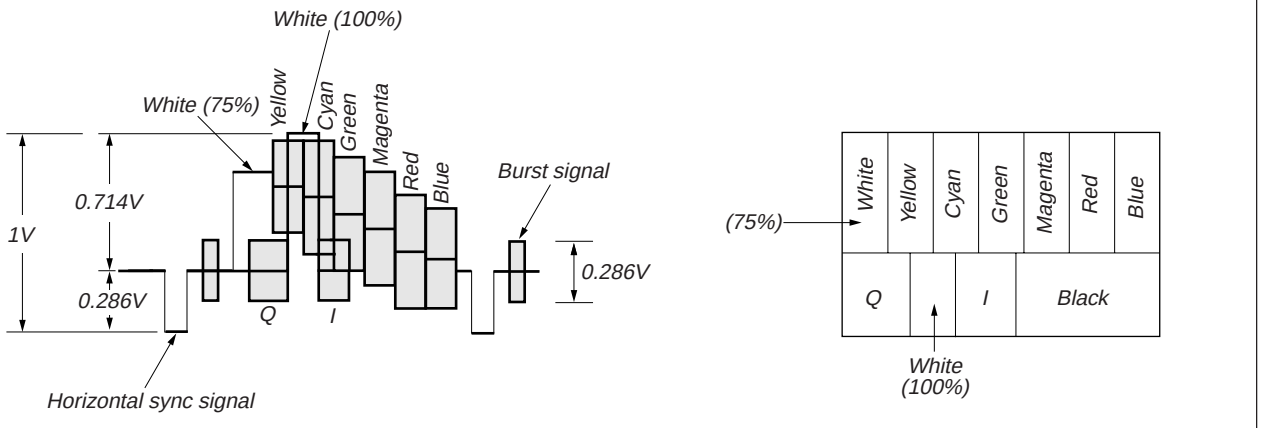


Fig. 5-3-3. Color bar signal of alignment tapes

3-1-6. Input/Output Level and Impedance

Video input/output
- Special stereo mini jack
- Video signal: 1 Vp-p, 75 Ω unbalanced, sync negative

S video input/output
- 4-pin mini DIN
- Luminance signal: 1 Vp-p, 75 Ω unbalanced, sync negative
- Chrominance signal: 0.286 Vp-p, 75 Ω unbalanced

Audio input/output
- Special stereo mini jack
- Input level: 327mV
- Input impedance: More than 47kΩ
- Output level: 327 mV (at load impedance 47 kΩ)
- Output impedance: Below 2.2 kΩ

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENT

1. Initialization of B, C, D, E, F, 7, 8 Page Data

If the B, C, D, E, F, 7, 8 page data is erased due to some reason, perform "1-2. INITIALIZATION OF B, C, D, E, F, 7, 8 PAGE DATA", of "5-1. CAMERA SECTION ADJUSTMENT"

2. Serial No. Input

2-1. Company ID Input

Write the company ID in the EEPROM (nonvolatile memory).

Page	C
Address	E8, E9, EA, EB, EC

Input method:

1) Select page: 0, address: 01, and set data: 01.
2) Input the following data to page: C, addresses: E8 to EC.
   Note: Press the PAUSE button of the adjustment remote commander each time to set the data.

Address	Data
E8	08
E9	00
EA	46
EB	01
EC	02

3) Select page: 0, address: 01, and set data: 00.

2-2. Serial No. Input

Write the serial No. and model code in the EEPROM (nonvolatile memory). Convert the serial No. on the name plate from decimal to hexadecimal, and write in the EEPROM.

Page	C
Address	ED, EE, EF

Input method:

1) Select page: 0, address: 01, and set data: 01.
2) Read the serial No. on the name plate, and take it as D_1.
   Example: If the serial No. is 77881.
   D_1=77881
   Note: Use six digits of the low rank when a serial No. is more than seven digits.
3) Obtain D_2 and H_1 corresponding to D_1 from Table 5-3-2.
   Example: If D_1 is "77881".
   $D_2=D_1-65536=12345$
   H_1=FE

D_1 (Decimal)	D_2 (Decimal)	H_1 (Hexadecimal) (Service model code)
000001 to 065535	D_1	FE
065536 to 131071	$D_1-65536$	FE
131072 to 196607	$D_1-131072$	FE

Table 5-3-2.

4) Input H_1 to page: C, address: ED. (Model code input)
   Example: If H_1 is "FE".
   Select page: C, address: ED, set data: FE, and press the PAUSE button.
5) Obtain the maximum decimal not exceeding D_2 from Table 5-3-3, and take this as D_3.
   Example: If D_2 is "12345".
   D_3=12288
6) Obtain the hexadecimal corresponding to D_3 from Table 5-3-3, and take this as H_3.
   Example: If D_3 is "12288".
   H_3=3000
7) Obtain the difference D_4 between D_2 and D_3. (Decimal calculation, $0 \leqq D_4 \leqq 255$)
   $D_4= D_2-D_3$
   Example: If D_2 is "12345" and D_3 is "12288".
   $D_4=12345-12288=57$
8) Convert D_4 to hexadecimal, and take this as H_4.
   (Refer to "Hexadecimal-decimal conversion table" in "5-4. Service Mode".)
   Example: If D_4 is "57".
   H_4=39
9) Input the upper 2 digits of H_3 to page: C, address: EE.
   Example: If H_3 is "3000".
   Select page: C, address: EE, set data: 30, and press the PAUSE button.
10) Input H_4 to page: C, address: EF.
    Example: If H_4 is "39".
    Select page: C, address: EF, set data: 39, and press the PAUSE button.
11) Select page: 0, address: 01, and set data: 00.

Decimal (D_3)	Hexa-decimal (H_3)	Decimal (D_3)	Hexa-decimal (H_3)	Decimal (D_3)	Hexa-decimal (H_3)	Decimal (D_3)	Hexa-decimal (H_3)	Decimal (D_3)	Hexa-decimal (H_3)	Decimal (D_3)	Hexa-decimal (H_3)	Decimal (D_3)	Hexa-decimal (H_3)	Decimal (D_3)	Hexa-decimal (H_3)
0	0000	8192	2000	16384	4000	24576	6000	32768	8000	40960	A000	49152	C000	57344	E000
256	0100	8448	2100	16640	4100	24832	6100	33024	8100	41216	A100	49408	C100	57600	E100
512	0200	8704	2200	16896	4200	25088	6200	33280	8200	41472	A200	49664	C200	57856	E200
768	0300	8960	2300	17152	4300	25344	6300	33536	8300	41728	A300	49920	C300	58112	E300
1024	0400	9216	2400	17408	4400	25600	6400	33792	8400	41984	A400	50176	C400	58368	E400
1280	0500	9472	2500	17664	4500	25856	6500	34048	8500	42240	A500	50432	C500	58624	E500
1536	0600	9728	2600	17920	4600	26112	6600	34304	8600	42496	A600	50688	C600	58880	E600
1792	0700	9984	2700	18176	4700	26368	6700	34560	8700	42752	A700	50944	C700	59136	E700
2048	0800	10240	2800	18432	4800	26624	6800	34816	8800	43008	A800	51200	C800	59392	E800
2304	0900	10496	2900	18688	4900	26880	6900	35072	8900	43264	A900	51456	C900	59648	E900
2560	0A00	10752	2A00	18944	4A00	27136	6A00	35328	8A00	43520	AA00	51712	CA00	59904	EA00
2816	0B00	11008	2B00	19200	4B00	27392	6B00	35584	8B00	43776	AB00	51968	CB00	60160	EB00
3072	0C00	11264	2C00	19456	4C00	27648	6C00	35840	8C00	44032	AC00	52224	CC00	60416	EC00
3328	0D00	11520	2D00	19712	4D00	27904	6D00	36096	8D00	44288	AD00	52480	CD00	60672	ED00
3584	0E00	11776	2E00	19968	4E00	28160	6E00	36352	8E00	44544	AE00	52736	CE00	60928	EE00
3840	0F00	12032	2F00	20224	4F00	28416	6F00	36608	8F00	44800	AF00	52992	CF00	61184	EF00
4096	1000	12288	3000	20480	5000	28672	7000	36864	9000	45056	B000	53248	D000	61440	F000
4352	1100	12544	3100	20736	5100	28928	7100	37120	9100	45312	B100	53504	D100	61696	F100
4608	1200	12800	3200	20992	5200	29184	7200	37376	9200	45568	B200	53760	D200	61952	F200
4864	1300	13056	3300	21248	5300	29440	7300	37632	9300	45824	B300	54016	D300	62208	F300
5120	1400	13312	3400	21504	5400	29696	7400	37888	9400	46080	B400	54272	D400	62464	F400
5376	1500	13568	3500	21760	5500	29952	7500	38144	9500	46336	B500	54528	D500	62720	F500
5632	1600	13824	3600	22016	5600	30208	7600	38400	9600	46592	B600	54784	D600	62976	F600
5888	1700	14080	3700	22272	5700	30464	7700	38656	9700	46848	B700	55040	D700	63232	F700
6144	1800	14336	3800	22528	5800	30720	7800	38912	9800	47104	B800	55296	D800	63488	F800
6400	1900	14592	3900	22784	5900	30976	7900	39168	9900	47360	B900	55552	D900	63744	F900
6656	1A00	14848	3A00	23040	5A00	31232	7A00	39424	9A00	47616	BA00	55808	DA00	64000	FA00
6912	1B00	15104	3B00	23296	5B00	31488	7B00	39680	9B00	47872	BB00	56064	DB00	64256	FB00
7168	1C00	15360	3C00	23552	5C00	31744	7C00	39936	9C00	48128	BC00	56320	DC00	64512	FC00
7424	1D00	15616	3D00	23808	5D00	32000	7D00	40192	9D00	48384	BD00	56576	DD00	64768	FD00
7680	1E00	15872	3E00	24064	5E00	32256	7E00	40448	9E00	48640	BE00	56832	DE00	65024	FE00
7936	1F00	16128	3F00	24320	5F00	32512	7F00	40704	9F00	48896	BF00	57088	DF00	65280	FF00

Table 5-3-3.

3-3. SERVO AND RF SYSTEM ADJUSTMENT

Before perform the servo and RF system adjustments, check that the specified value of "36MHz Origin Oscillation Adjustment" of "CAMERA SYSTEM ADJUSTMENT" is satisfied.

Adjusting Procedure:

1. Cap FG duty adjustment
2. PLL f_0 & LPF f_0 adjustment
3. Switching position adjustment
4. AGC center level
5. APC & AEQ adjustment
6. PLL f_0 & LPF f_0 final adjustment

1. Cap FG Duty Adjustment (VC-260 board) RadarW

Set the Cap FG signal duty cycle to 50% to establish an appropriate capstan servo. If deviated, the uneven rotation of capstan and noise can occur.

Measurement Point	Display data of page: 3, address: 03
Measuring Instrument	Adjustment remote commander
Adjustment Page	C
Adjustment Address	16
Specified Value	00

Adjusting method:

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting a cassette.
2	0	01	01	Set the data.
3	3	01	1B	Set the data, and press PAUSE button.
4	3	02		Check that the data changes in the following order. "1B" → "2B" → "00"
5	3	03		Check that the data is "00". (Note)
6	0	01	00	Set the data.

Note: If the data is "01", adjustment has errors or the mechanism deck is defective.

2. PLL fo & LPF fo Adjustment (VC-260 board) RadarW

Mode	VTR stop
Measurement Point	Display data of page: 3, address: 02, 03
Measuring Instrument	Adjustment remote commander
Adjustment Page	C
Adjustment Address	1F, 20, 22, 29
Specified Value	Data of page: 3, address: 02 is "00". Data of page: 3, address: 03 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	3	01	00	Set the data, and press PAUSE button.
3	3	01	30	Set the data, and press PAUSE button.
4	3	02		Check that the data changes to "00" with in 5 sec. (Note)
5	3	03		Check that the data is "00". (Note)
6	0	01	00	Set the data.

Note: If it isn't satisfied, select page: C, address: 21, set the following data, and press the PAUSE button, and repeat steps 2 to 5.

	Setting data
When the data of page: C, address: 21 is "CA".	CE
When the data of page: C, address: 21 is "CE".	C6
When the data of page: C, address: 21 is "C6".	D2
When the data of page: C, address: 21 is "D2"	C2

There are errors when it isn't satisfied even if the above treatment is done.
If bit2, bit3, bit4, bit5 or bit 6 of the data of page: 3, address: 03 is "1", there are errors. For the error contents, see the following table. (For the bit values, refer to "5-4. SERVICE MODE", "4-3. 3. Bit value discrimination".)

Bit value of page: 3, address: 03 data	Error contents
bit 2 = 1 or bit 3 = 1	PLL fo fine adjustment is defective
bit 4 = 1 or bit 5 = 1	PLL fo adjustment is defective
bit 6 = 1	LPF fo is defective

3. Switching Position Adjustment (VC-260 board) RadarW

Mode	VTR playback
Signal	SW/OL reference tape (XH2-3)
Measurement Point	Display data of page: 3, address: 03
Measuring Instrument	Adjustment remote commander
Adjustment Page	C
Adjustment Address	10, 11, 12, 13
Specified Value	00

Adjusting method:

Order	Page	Address	Data	Procedure
1				Insert the SW/OL reference tape and enter the VTR STOP mode.
2	0	01	01	Set the data.
3	C	10	EE	Set the data, and press PAUSE button.
4	3	21		Check that the data is “02”. (Note1)
5	3	01	0D	Set the data, and press PAUSE button.
6	3	02		Check that the data changes to “00”.
7	3	03		Check that the data is “00”. (Note2)
8	0	01	00	Set the data.

Note1: If the data of page: 3, address: 21 is “72”, the tape top being played. After playing the tape for 1 to 2 seconds, stop it, perform step 4 and higher.

Note2: If bit 0 of the data is “1”, the EVEN channel is defective. If bit 1 is “1”, the ODD channel is defective. Contents of the defect is written into page: C, addresses: 10 and 12. See the following table. (For the bit values, refer to “5-4. SERVICE MODE”, “4-3. 3. Bit value discrimination”.) If bit 3 of the data is “1”, the tape end being played, so rewind the tape and perform the adjustment again.

When the EVEN channel is defective

Data of page: C, address: 10	Contents of defect
EE	Writing into EEPROM (IC4701) is defective
E8	Adjustment data is out of range
E7	No data is returned from IC5302 (CAIN)

When the ODD channel is defective

Data of page: C, address: 12	Contents of defect
EE	Writing into EEPROM (IC4701) is defective
E8	Adjustment data is out of range
E7	No data is returned from IC5302 (CAIN)

4. AGC Center Level and APC & AEQ Adjustment RadarW

4-1. Preparations before adjustments

Mode	Camera recording
Subject	Arbitrary

Adjusting method:

Order	Page	Address	Data	Procedure
1	2	30	40	Set the data.
2				Record the camera signal for three minutes.

4-2. AGC Center Level Adjustment (VC-260 board)

Mode	Playback
Signal	Recorded signal at “Preparations before adjustments”
Measurement Point	Pin ⑳ of CN002 (RF MON) (Note 1) Ext. trigger: Pin ⑰ of CN002 (SWP)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	1E
Specified Value	The data of page: 3, address: 03 is “00”

Note 1: Connect a 75Ω resistor between Pin ⑳ and Pin ⑲ (GND) of CN002.
75Ω resistor (Parts code: 1-247-804-11)

Adjusting method:

Order	Page	Address	Data	Procedure
1				Playback the recorded signal at “Preparations before adjustments”
2	0	01	01	Set the data.
3	3	33	08	Set the data.
4				Confirm that the playback RF signal is stable. (Fig. 5-3-4.)
5	3	01	23	Set the data, and press PAUSE button.
6	3	02		Check that the data is “00”.
7	3	03		Check that the data is “00”. (Note2)
8				Perform “APC & AEQ Adjustment”.

Note2: If the data of page: 3, address: 03 is other than “00”, adjustment has errors. (Take an appropriate remedial measures according to the errors referring to the following table.)

Data	Contents of defect
20	Perform re-adjustment. (Note 3)
30	The machine is defective
40	Perform re-adjustment. (Note 3)
50	The machine is defective

Note 3: If this data is displayed twice successively, the machine is defective.

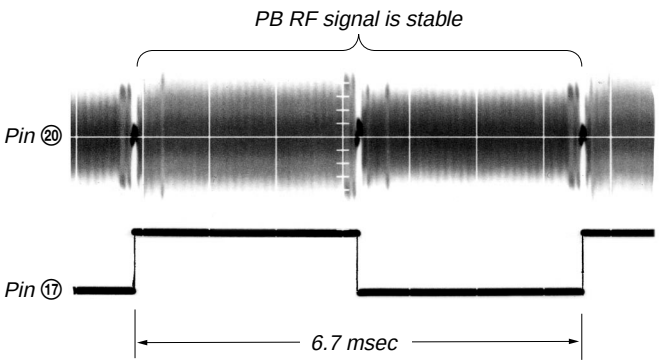


Fig. 5-3-4.

4-3. APC & AEQ Adjustment (VC-260 board)

Mode	Playback
Signal	Recorded signal at “Preparations before adjustments”
Measurement Point	Pin ⑳ of CN002 (RF MON) (Note 1) Ext. trigger: Pin ⑰ of CN002 (SWP)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	18, 19, 1B, 1C, 21, 2C
Specified Value	The data of page: 3, address: 03 is “00”

Note 1: Connect a 75Ω resistor between Pin ⑳ and Pin ⑲ (GND) of CN002.
75Ω resistor (Parts code: 1-247-804-11)
Note 2: The “AGC Center Level Adjustment” must have already been completed before starting this adjustment.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Playback the recorded signal at “Preparations before adjustments”
2	0	01	01	Set the data.
3	3	33	08	Set the data.
4				Confirm that the playback RF signal is stable. (Fig. 5-3-5.)
5	3	01	07	Set the data, and press PAUSE button.
6	3	02		Check that the data changes from “07” to “00” in about 20 seconds after pressing PAUSE button.
7	3	03		Check that the data is “00”. (Note3)
8				Perform “Processing after Completing Adjustments”.

Note3: If the data is other than “00”, adjustment has errors. Take an appropriate remedial measures according to the errors referring to the following table.

Data	Contents of defect
20	Perform re-adjustment. (Note 4)
30	The machine is defective
50	Perform re-adjustment. (Note 4)
60	The machine is defective
80	The machine is defective

Note 4: If this data is displayed twice successively, the machine is defective.

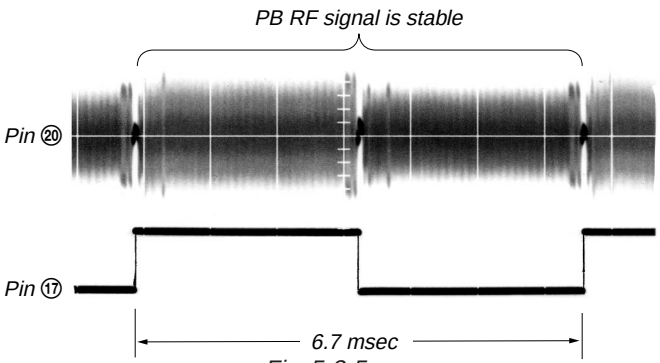


Fig. 5-3-5.

4-4. Processing after Completing Adjustments

Order	Page	Address	Data	Procedure
1	2	30	00	Set the data.
2	3	33	00	Set the data.
3	0	01	00	Set the data.

5. PLL fo & LPF fo Final Adjustment (VC-260 board)

RadarW

Mode	VTR stop
Signal	Arbitrary
Measurement Point	Display data of page: 3, address: 02, 03
Measuring Instrument	Adjustment remote commander
Adjustment Page	C
Adjustment Address	1F, 20, 22, 29
Specified Value	Data of page: 3, address: 02 is “00”. Data of page: 3, address: 03 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	3	01	30	Set the data, and press PAUSE button.
3	3	02		Check that the data changes to “00” with in 5 sec. (Note1)
4	3	03		Check that the data is “00”. (Note2)
5	0	01	00	Set the data.

Note1: If it isn’t satisfied, there are errors.

Note2: If the data of page: 3, address: 03 is other than “00”, there are errors. For the error contents, see the following table. (For the bit values, refer to “5-4. SERVICE MODE”, “4-3. 3. Bit value discrimination”.)

Bit value of page: 3, address: 03 data	Error contents
bit 2 = 1 or bit 3 = 1	PLL fo fine adjustment is defective
bit 4 = 1 or bit 5 = 1	PLL fo adjustment is defective
bit 6 = 1	LPF fo is defective

3-4. VIDEO SYSTEM ADJUSTMENTS

Before perform the video system adjustments, check that the specified value of "36MHz Origin Oscillation Adjustment" of "CAMERA SYSTEM ADJUSTMENT" is satisfied.

1. Chroma BPF f_0 Adjustment (VC-260 board)

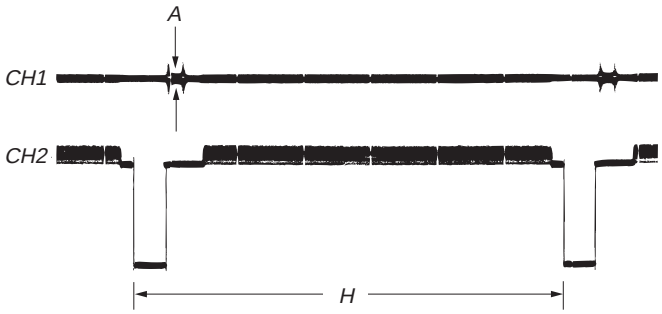
Set the center frequency of IC801 chroma band-pass filter.

Mode	Camera
Subject	All black (Cover the lens with the lens cap)
Measurement Point	CH1: Chroma signal terminal of S VIDEO jack (75Ω terminated) CH2: Y signal terminal of S VIDEO jack (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	28
Specified Value	A = 100mVp-p or less B = 200mVp-p or more

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2				Check that the burst signal (B) is output to the chroma signal terminal of S VIDEO jack.
3	3	0C	04	Set the data, and press PAUSE button.
4	C	28		Change the data for minimum amplitude of the burst signal level (A). (The data should be "00" to "0F".)
5	C	28		Press PAUSE button.
6	3	0C	00	Set the data, and press PAUSE button.
7				Check that the burst signal level (B) satisfies the specified value.
8	0	01	00	Set the data.

When the data of page: 3, address: 0C, is 04:



When the data of page: 3, address: 0C, is 00:

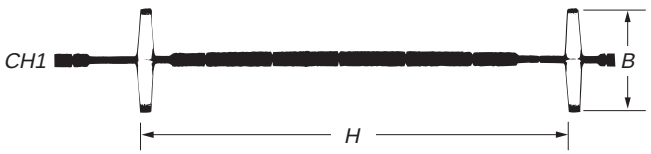


Fig. 5-3-6.

2. S VIDEO OUT Y Level Adjustment (VC-260 board)

Mode	Camera
Subject	Arbitrary
Measurement Point	Y signal terminal of S VIDEO jack (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	25
Specified Value	A = 1000 ± 14mV

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	2	35		Note down the data.
3	2	35	01	Set the data.
4	3	0C	02	Set the data, and press PAUSE button.
5	C	25		Change the data and set the Y signal level (A) to the specified value.
6	C	25		Press PAUSE button.
7	3	0C	00	Set the data, and press PAUSE button.
8	2	35		Set the data that is noted down at step 2.
9	0	01	00	Set the data.

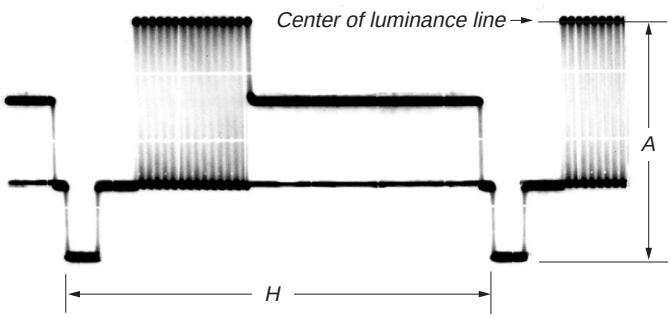


Fig. 5-3-7.

3. S VIDEO OUT Chroma Level Adjustment (VC-260 board)

Mode	Camera
Subject	Arbitrary
Measurement Point	Chroma signal terminal of S VIDEO jack (75Ω terminated) External trigger: Y signal terminal of S VIDEO jack
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	26, 27
Specified Value	Cr level: A = 714 ± 14mV Cb level: B = 714 ± 14mV Burst level: C = 286 ± 6mV

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	2	35		Note down the data.
3	2	35	01	Set the data.
4	3	0C	02	Set the data, and press PAUSE button.
5	C	26		Change the data and set the Cr signal level (A) to the specified value.
6	C	26		Press PAUSE button.
7	C	27		Change the data and set the Cb signal level (B) to the specified value.
8	C	27		Press PAUSE button.
9				Check that the burst signal level (C) is satisfied the specified value.
10	3	0C	00	Set the data, and press PAUSE button.
11	2	35		Set the data that is noted down at step 2.
12	0	01	00	Set the data.

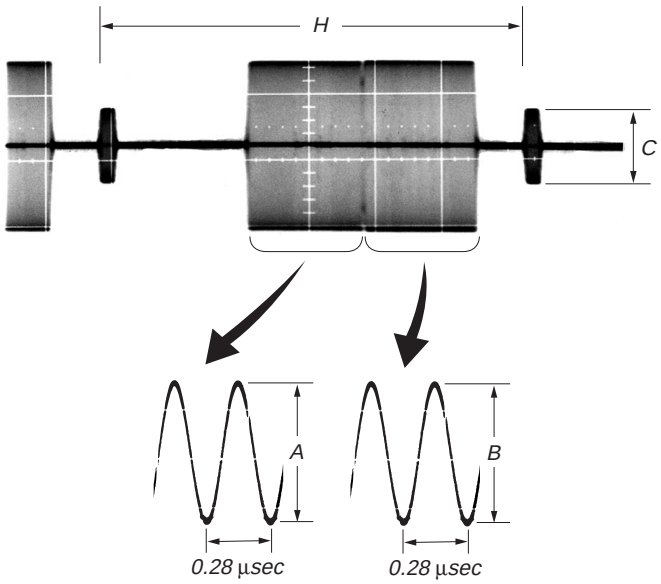


Fig. 5-3-8.

4. VIDEO OUT Y, Chroma Level Check (VC-260 board)

Mode	Camera
Subject	Arbitrary
Measurement Point	VIDEO terminal of AUDIO/VIDEO jack (75Ω terminated)
Measuring Instrument	Oscilloscope
Specified Value	Sync level: A = 286 ± 18mV Burst level: B = 286 ± 18mV

Adjusting method:

Order	Page	Address	Data	Procedure
1	2	35		Note down the data.
2	2	35	01	Set the data.
3	3	0C	02	Set the data, and press PAUSE button.
4				Check that the sync signal level (A) satisfies the specified value.
5				Check that the burst signal level (B) satisfies the specified value.
6	3	0C	00	Set the data, and press PAUSE button.
7	2	35		Set the data that is noted down at step 1.
8	0	01	00	Set the data.

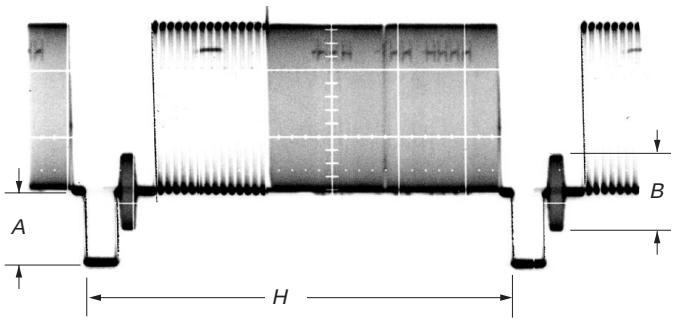


Fig. 5-3-9.

3-5. IR TRANSMITTER ADJUSTMENTS

Adjust using the IR receiver jig (J-6082-383-A).

Switch setting:

SUPER LASER LINK ..... ON (Red LED is lit)

1. IR Video Carrier Frequency Adjustment (VC-260 board)

Mode	VTR stop
Signal	Arbitrary
Measurement Point	Pin ⑤ of CN003 of IR receiver jig (RF) (Or Pin ⑯ of IC901 of VC-260 board)
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	6E
Specified Value	f = 11.85 ± 0.05 MHz (*1) f = 11.50 ± 0.05 MHz (*2)

*1: IC901 of VC-260 board is LA9511.
*2: IC901 of VC-260 board is AN2920 or AN2921.

Connection of Equipment:

Connect the measuring device as shown in the following figure, and adjust.

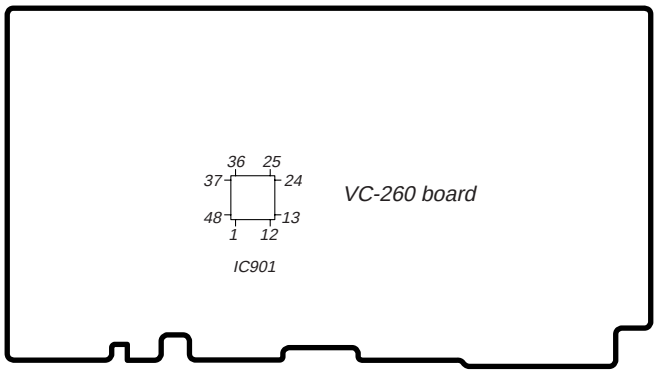


Fig. 5-3-10.

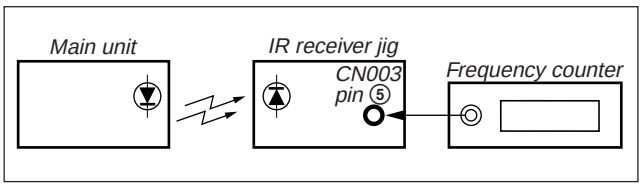


Fig. 5-3-11.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	3	0C	08	Set the data, and press PAUSE button.
3	F	6E		Change the data, and set the video carrier frequency (f) to the specified value.
4	F	6E		Press PAUSE button.
5	3	0C	00	Set the data, and press PAUSE button.
6	0	01	00	Set the data.

2. IR Video Deviation Adjustment (VC-260 board)

Note: When IC901 of VC-260 board is AN2921, this adjustment is unnecessary. Only, confirm whether the specified value is satisfied.

Mode	VTR stop
Signal	Arbitrary
Measurement Point	VIDEO OUT terminal of IR receiver jig (Terminated at 75Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	6D
Specified Value	A = 1.00 ± 0.05 V

Connection of Equipment:

Connect the measuring device as shown in the following figure, and adjust.

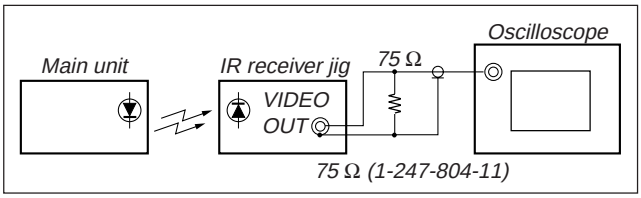


Fig. 5-3-12.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2	3	0C	02	Set the data, and press PAUSE button.
3	F	6D		Change the data, set the video signal amplitude (A) to the specified value.
4	F	6D		Press PAUSE button.
5	3	0C	00	Set the data, and press PAUSE button.
6	0	01	00	Set the data.

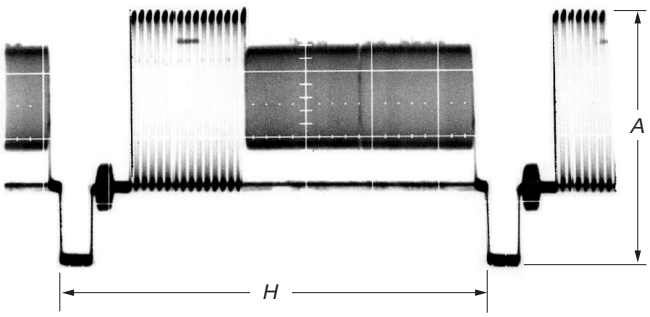


Fig. 5-3-13.

3. IR Audio Deviation Adjustment (VC-260 board)

Note: When IC901 of VC-260 board is AN2921, this adjustment is unnecessary. Only, confirm whether the specified value is satisfied.

Mode	VTR stop
Signal	Video : No signal Audio : –400Hz, –7.5dBs, Audio left and right terminal of AUDIO/VIDEO jack
Measurement Point	AUDIO L terminal and AUDIO R terminal of IR receiver jig (Terminated at 47kΩ)
Measuring Instrument	Audio level meter
Adjustment Page	F
Adjustment Address	6C
Specified Value	Signal level: –7.5 ± 1.0dBs Level difference of L and R: Below 2dB

Connection of Equipment:

Connect the measuring device as shown in the following figure, and adjust.

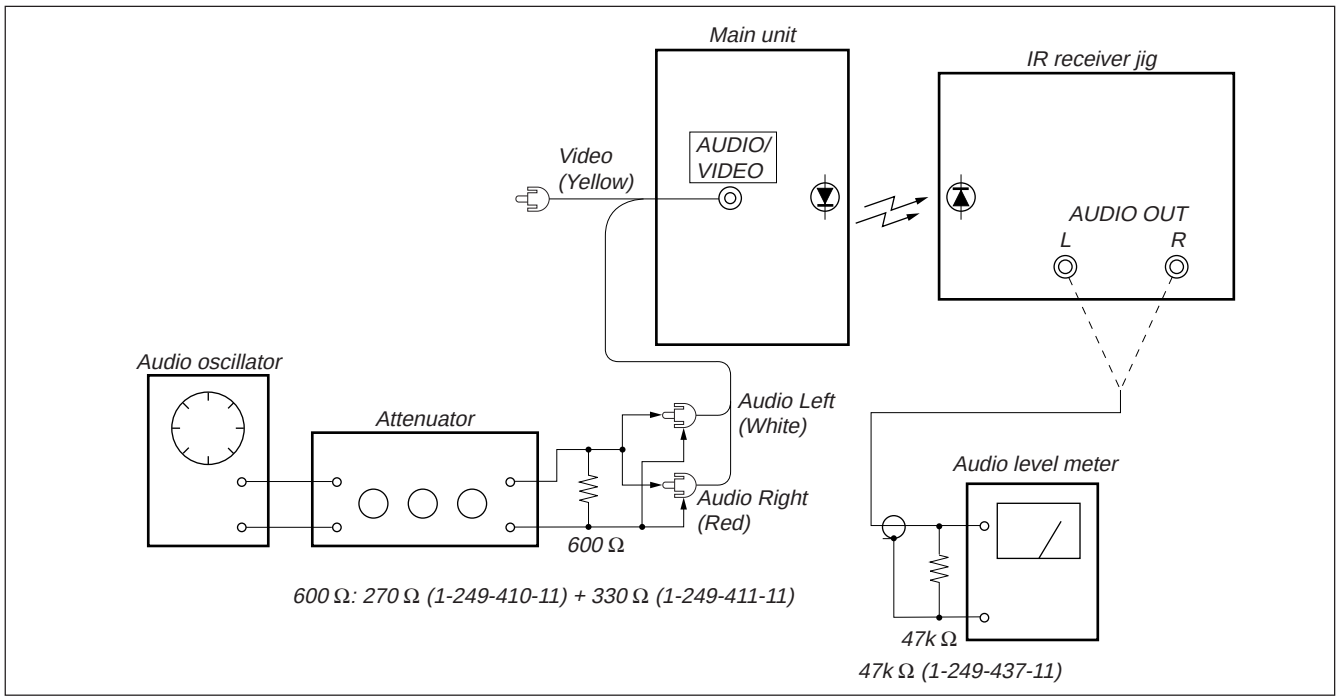


Fig. 5-3-14.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	Set the data.
2				Connect the audio level meter to the AUDIO L terminal of the IR receiver jig.
3	F	6C		Change the data and set the 400Hz audio signal level to the specified value.
4	F	6C		Press PAUSE button.
5				Connect the audio level meter to the AUDIO R terminal of the IR receiver jig.
6	F	6C		Check that the 400Hz audio signal level is within the specified value. If outside, repeat from step 2.
7	0	01	00	Set the data.

3-6. AUDIO SYSTEM ADJUSTMENTS

[Connection of Audio System Measuring Devices]

Connect the audio system measuring devices as shown in Fig. 5-3-15.

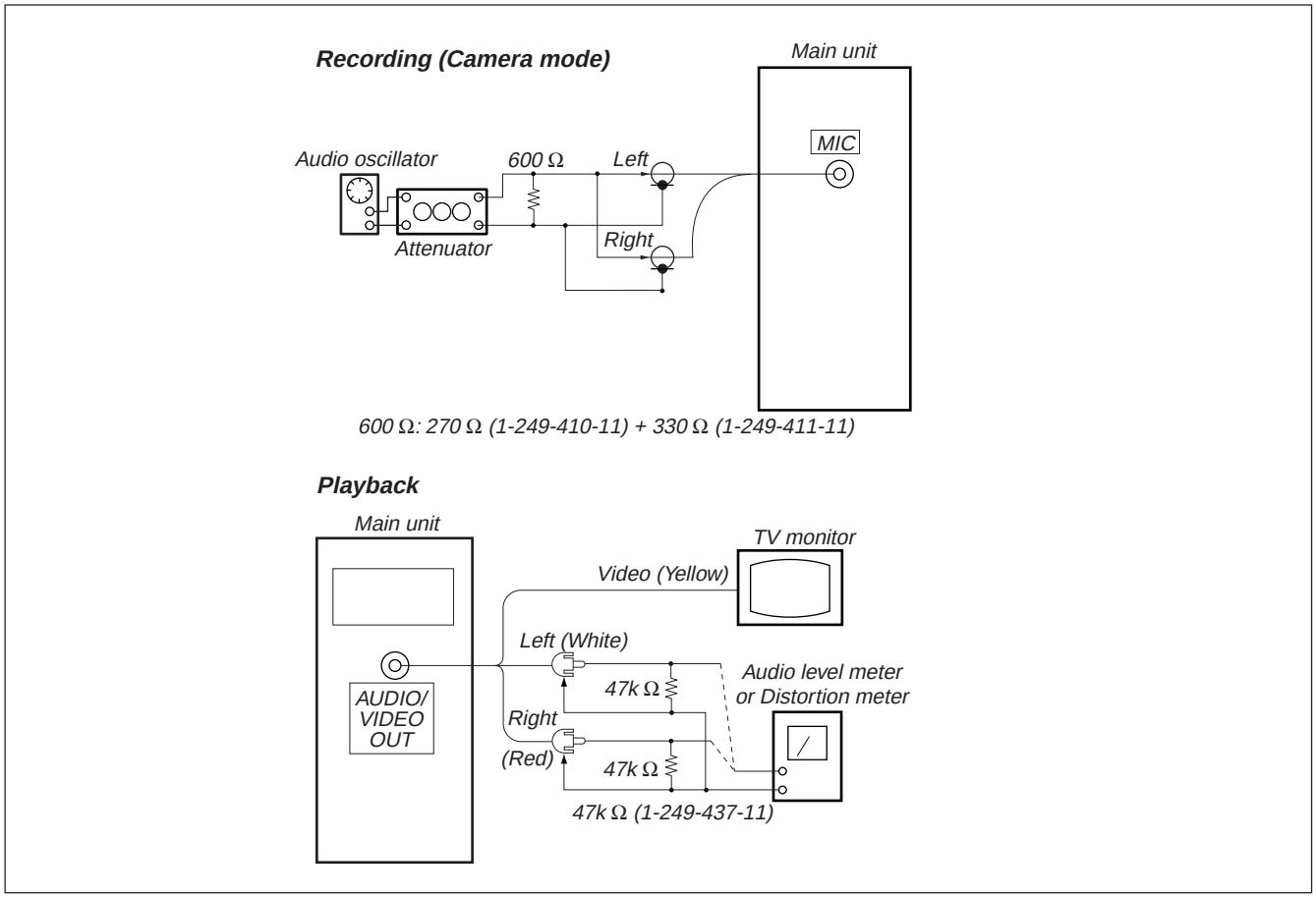


Fig. 5-3-15.

1. Playback Level Check

Mode	VTR playback
Signal	Alignment tape: For audio operation check(XH5-3)
Measurement Point	Audio left or right terminal of AUDIO VIDEO jack
Measuring Instrument	Audio level meter and frequency counter
Specified Value	32 kHz mode: 1 kHz, +3.0 ± 2.0dBs 48 kHz mode: 1 kHz, +3.0 ± 2.0dBs 44.1 kHz mode: The 7.35kHz signal level during EMP OFF is +2.0 ± 2.0dBs. The 7.35kHz signal level during EMP ON is –6 ± 2 dB from the signal level during EMP OFF.

Checking Method:

1) Check that the playback signal level is the specified value.

2. Overall Level Characteristics Check

Mode	Camera recording and playback
Signal	400Hz, –66 dBs signal: MIC jack left and right
Measurement Point	Audio left or right terminal of AUDIO VIDEO jack
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 3.0dBs

Checking Method:

1) Input the 400Hz, –66dBs signal in the MIC jack.
2) Record in the camera mode.
3) Playback the recorded section.
4) Check that the 400Hz signal level is the specified value.

3. Overall Distortion Check

Mode	Camera recording and playback
Signal	400Hz, –66dBs signal: MIC jack left and right
Measurement Point	Audio left or right terminal of AUDIO VIDEO jack
Measuring Instrument	Audio distortion meter
Specified Value	Below 0.4% (200Hz to 6kHz BPF ON)

Checking Method:

1) Input the 400Hz, –66dBs signal in the MIC jack.
2) Record in the camera mode.
3) Playback the recorded section.
4) Check that the distortion is the specified value.

4. Overall Noise Level Check

Mode	Camera recording and playback
Signal	No signal: Insert a shorting plug in the MIC jack
Measurement Point	Audio left or right terminal of AUDIO VIDEO jack
Measuring Instrument	Audio level meter
Specified Value	Below –45dBs (IHF-A filter ON, 20kHz LPF ON)

Checking Method:

1) Insert a shorting plug in the MIC jack.
2) Record in the camera mode.
3) Playback the recorded section.
4) Check that the noise level is the specified value.

5. Overall Separation Check

Mode	Camera recording and playback
Signal	400Hz, –66dBs signal: MIC jack <right> [left] (Connect the MIC jack <left> [right] to GND)
Measurement Point	Audio <left> [right] terminal of AUDIO VIDEO jack
Measuring Instrument	Audio level meter
Specified Value	Below –40dBs (IHF-A filter ON)

< > : Left channel check
[ ] : Right channel check

Checking Method:

1) Input the 400Hz, –66dBs signal in the <right> [left] terminal of the MIC jack only.
2) Record in the camera mode.
3) Playback the recorded section.
4) Check that the signal level of the audio <left> [right] terminal is the specified value.

5-4. SERVICE MODE

4-1. ADJUSTMENT REMOTE COMMANDER

The adjustment remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the adjustment remote commander

1) Connect the adjustment remote commander to the LANC terminal.
2) Set the HOLD switch of the adjustment remote commander to "HOLD" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander will display as shown in Fig. 5-4-1.

Fig. 5-4-1

3) Operate the adjustment remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0 1 2 3 4 5 6 7 8 9 A B C D E F
LCD Display	0 1 2 3 4 5 6 7 8 9 A b c d E F
Decimal notation conversion value	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

   - Changing the address
     The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed. There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (B, C, D, F, 7, 8 page) in the nonvolatile memory. (The new adjusting data will not be recorded in the nonvolatile memory if this step is not performed.)
4) After completing all adjustments, turn off the main power supply once.

2. Precautions upon using the adjustment remote commander

Mishandling of the adjustment remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

4-2. DATA PROCESS

The calculation of the DDS display and the adjustment remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Indicates the hexadecimal-decimal conversion table.

Hexadecimal-decimal Conversion Table

Upper digit of hexadecimal \ Lower digit of hexadecimal	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	77	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

② (above the D (d) column)

Note: The characters shown in the parenthesis ( ) shown the display on the adjustment remote commander.

(Example) If the DDS display or the adjustment remote commander shows BD (bd);
Because the upper digit of the adjustment number is B (b), and the lower digit is D (d), the meeting point "189" of ① and ② in the above table is the corresponding decimal number.

Table. 5-4-1.

4-3. SERVICE MODE

1. Setting the Test Mode

Page D	Address 10

Data	Function
00	Normal
01	Forced camera power ON
02	Forced VTR power ON
03	Forced camera + VTR power ON
05	Forced memory power ON

- Before setting the data , select page: 0, address: 01, and set data: 01.
- For page D, the data set is recorded in the non-volatile memory by pressing the PAUSE button of the adjustment remote commander. In this case, take note that the test mode will not be exited even when the main power is turned off.
- After completing adjustments/repairs, be sure to return the data of this address to 00, and press the PAUSE button of the adjustment remote commander.
  Select page: 0, address: 01, and set data: 00.

2. Emergence Memory Address

Page C	Address F4 to FF

Address	Contents
F4	EMG code when first error occurs
F6	Upper: MSW code when shift starts when first error occurs Lower: MSW code when first error occurs
F7	Lower: MSW code to be moved when first error occurs
F8	EMG code when second error occurs
FA	Upper: MSW code when shift starts when second error occurs Lower: MSW code when second error occurs
FB	Lower: MSW code to be moved when second error occurs
FC	EMG code when last error occurs
FE	Upper: MSW code when shift starts when last error occurs Lower: MSW code when last error occurs
FF	Lower: MSW code to be moved when last error occurs

When no error occurs in this unit, data “00” is written in the above addresses (F4 to FF). when first error occurs in the unit, the data corresponding to the error is written in the first emergency address (F4 to F7). In the same way, when the second error occurs, the data corresponding to the error is written in the second emergency address (F8 to FB). Finally, when the last error occurs, the data corresponding to the error is written in the last emergency address (FC to FF).

Note: After completing adjustments, be sure to initialize the data of addresses F4 to FF to “00”.

Initializing method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 37, and press the PAUSE button.
3) Select page: 0, address: 01, and set data: 00.

2-1. EMG Code (Emergency Code)

Codes corresponding to the errors which occur are written in addresses F4, F8 and FC. The type of error indicated by the code are shown in the following table.

Code	Emergency Type
00	No error
10	Loading motor emergency during loading
11	Loading motor emergency during unloading
22	T reel emergency during normal rotation
23	S reel emergency during normal rotation
24	T reel emergency (Short circuit between S reel terminal and T reel terminal)
30	FG emergency at the start up of the capstan
40	FG emergency at the start up of the drum
42	FG emergency during normal rotation of the drum

2-2. MSW Code

MSW when errors occur:

Information on MSW (mode SW) when errors occur

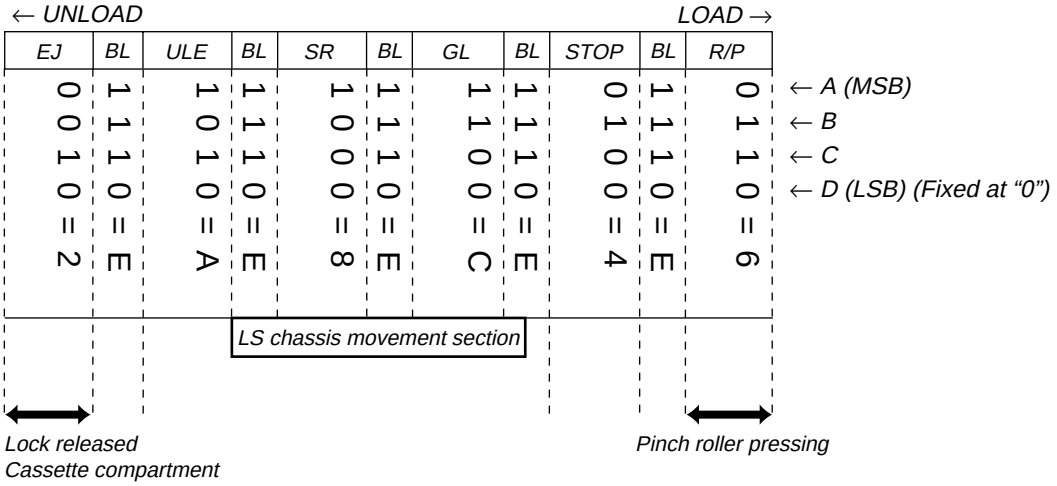
MSW when movement starts:

Information on MSW when movements starts when the mechanism position is moved (When the L motor is moved)

MSW of target of movement:

Information on target MSW of movement when the mechanism position is moved

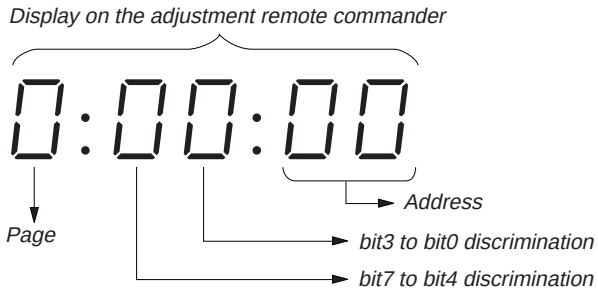
Mechanical Position



Position	Code	Contents
EJ	2	Position at which the cassette component lock is released, at the farthest unload side mechanically at which the mechanism can move no further in the UNLOAD direction.
BL	E	BLANK code, at the boundary between codes.
ULE	A	EJECT completion position. when the cassette is ejected, the mechanism will stop at this position. Cassette IN standby. The guide will start protruding out as the mechanism moves towards the LOAD position.
SR	8	Position at which it is possible to release the S ratchet.
GL	C	Guide loading are performed here.
STOP	4	Stop position in the loading state. The pinch roller separates, the tension regulator returns, and the brake is imposed on both reels.
R/P	6	PB, REC, CUE, REVIEW, PAUSE positions. When pinch roller is pressed, and the tension regulator is ON, the mechanism is operating at this position in modes in which normal images are shown.
NULL	0	Code not existing in the MD. Default value.
	F	Status before finding any mechanism position.

3. Bit value discrimination

Bit values must be discriminated using the display data of the adjustment remote commander for following items. Use the table below to discriminate if the bit value is "1" or "0".



	Display on the adjustment remote commander	Bit values			
		bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ	8	1	0	0	0
	9	1	0	0	1
	A (A)	1	0	1	0
	B (b)	1	0	1	1
	C (c)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ	E (E)	1	1	1	0
	F (F)	1	1	1	1

Example: If "8E" is displayed on the adjustment remote commander, the bit values for bit7 to bit4 are shown in the Ⓐ column, and the bit values for bit3 to bit0 are shown in the Ⓑ column.

4. Switch check (1)

Page 2	Address 43

Bit	Function	When bit value = 1	When bit value = 0
0	POWER SW (VTR MODE SW) (PS-1700 block S1)	OFF	ON (VCR)
1	POWER SW (CAM MODE SW) (PS-1700 block S1)	OFF	ON (CAMERA)
2	START/STOP SW (PS-1700 block S2)	OFF	ON
3	EJECT SW (FP-310 flexible block S601)	OFF	ON
4	CC DOWN SW (Mechanism chassis)	OFF (UP)	ON (DOWN)
5	PHOTO FREEZE SW (PS-1700 block S71)	OFF	ON
6	POWER SW (PHOTO STBY SW) (PS-1700 block S1) *1	OFF	ON (MEMORY)
7			

*1: DCR-TRV17 model only

Using method:

1) Select page: 2, address: 43.
2) By discriminating the bit value of display data, the state of the switch can be discriminated.

5. Switch check (2)

Page 2	Address 81

Bit	Function	When bit value = 1	When bit value = 0
4	AUDIO/VIDEO jack (JK-204 board J3102)	Used	Not used
5	S VIDEO jack (JK-204 board J3102)	Not used	Used
6	MIC jack (MA-403 board J8502)	Used	Not used

Using method:

1) Select page: 2, address: 81.
2) By discriminating the bit value of display data, the state of the switch can be discriminated.

6. Switch check (3)

Page 3	Address 5A

Bit	Function	When bit value = 1	When bit value = 0
6	HEADPHONES jack (FP-273 flexible)	Used	Not used

Using method:

1) Select page: 3, address: 5A.
2) By discriminating the bit value of display data, the state of the switch can be discriminated.

7. Switch check (4)

Page 2	Address 5C to 63

Using method:

1) Select page: 2, address: 5C to 63.
2) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00 to 0C	0D to 24	25 to 3F	40 to 5D	5E to 81	82 to AA	AB to D7	D8 to FF
5C (KEY AD0) (IC1104 ⑫⑥)	SUPER LASER LINK (FP-305)(S100)	EDIT SEARCH + (FP-305)(S101)	EDIT SEARCH – (FP-305)(S102)					No key input
5D (KEY AD1) (IC1104 ⑫⑦)	MPEG PLAY (CK-101) (S8314) *1	MEMORY PLAY (CK-101) (S8319) *1	MEMORY INDEX (CK-101) (S8325) *1	MEMORY DELETE (CK-101) (S8326) *1	MEMORY MIX (CK-101) (S8320) *1	MEMORY + (CK-101) (S8328) *1	MEMORY – (CK-101) (S8310) *1	No key input
5E (KEY AD2) (IC1104 ⑫⑧)	VOLUME – (CK-101) (S8303)	VOLUME + (CK-101) (S8307)	DISPLAY (CK-101) (S8311)	END SERCH (CK-101) (S8316)	PB ZOOM (CK-101) (S8321)	PAUSE (CK-101) (S8317)	PANEL CLOSE (CK-101) (S8324)	PANEL OPEN (CK-101) (S8324)
5F (KEY AD3) (IC1104 ⑫⑨)	STOP (CK-101) (S8322)	REC (CK-101) (S8301,8308)	AUDIO DUB (CK-101) (S8305)	REW (CK-101) (S8309)	PLAY (CK-101) (S8304)	FF (CK-101) (S8312)		No key input
60 (KEY AD4) (IC1104 ⑬⑩)	MENU (CK-101) (S8327)	EXPOSURE (CK-101) (S8323)	BACK LIGHT (CK-101) (S8318)	FADER (CK-101) (S8313)	FOCUS (INFINITY) (CK-101)(S3302)	FOCUS (AUTO/ MANUAL) (CK-101)(S3302)	EXECUTE (KP-1700) (S102)	No key input
61 (KEY AD5) (IC1104 ⑬①)	SUPER NIGHT SHOT (FP-311)(S701)							No key input
62 (KEY AD6) (IC1104 ⑬②)	PANEL REVERSE (FP-309)(S501)							PANEL NORMAL (FP-309)(S501)
63 (KEY AD7) (IC1104 ⑬③)	PHOTO (PHOTO REC) (PS-1700)(S71)							No key input

*1: DCR-TRV17 model only

8. Record of Use check

Note: When replacing the mechanism deck or the drum assembly, initialize the data of address: A2 to A4.

Page 2	Address A2 to AA

Bit	Function		Remarks
A2	Drum rotation	Minutes	
A3	counted time	Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
A4	(BCD code)	Hour (H)	1000th place digit and 100th place digit of counted time (decimal digit)
A5	User initial power	Year	After setting the clock, set the date of power on next
A6	on date	Month	
A7	(BCD code)	Day	
A8	Final condensation	Year	
A9	occurrence date	Month	
AA	(BCD code)	Day	

Using method:

1) The record of use data is displayed at page: 2, addresses: A2 to AA.
   Note: This data will be erased (reset) when the Cabinet (R) (VC-260 board CN009 (18P)) is removed.

Initializing method:

1) Using the adjustment remote commander, select the object address and set data: 00.

9. Record of Self-diagnosis check

Page 2	Address B0 to C6

Address	Self-diagnosis code
B0	“Repaired by” code (Occurred 1st time) *1
B1	“Block function” code (Occurred 1st time)
B2	“Detailed” code (Occurred 1st time)
B4	“Repaired by” code (Occurred 2nd time) *1
B5	“Block function” code (Occurred 2nd time)
B6	“Detailed” code (Occurred 2nd time)
B8	“Repaired by” code (Occurred 3rd time) *1
B9	“Block function” code (Occurred 3rd time)
BA	“Detailed” code (Occurred 3rd time)
BC	“Repaired by” code (Occurred 4th time) *1
BD	“Block function” code (Occurred 4th time)
BE	“Detailed” code (Occurred 4th time)
C0	“Repaired by” code (Occurred 5th time) *1
C1	“Block function” code (Occurred 5th time)
C2	“Detailed” code (Occurred 5th time)
C4	“Repaired by” code (Occurred the last time) *1
C5	“Block function” code (Occurred the last time)
C6	“Detailed” code (Occurred the last time)

*1 : “01” → “C”, “03” → “E”

Using method:

1) The past self-diagnosis codes are displayed at page: 2, addresses: B0 to C6. Refer to “SELF-DIAGNOSIS FUNCTION” for detail of the self-diagnosis code.
   Note: This data will be erased (reset) when the Cabinet (R) (VC-260 board CN009 (18P)) is removed.

SECTION 6
REPAIR PARTS LIST

6-1. EXPLODED VIEWS

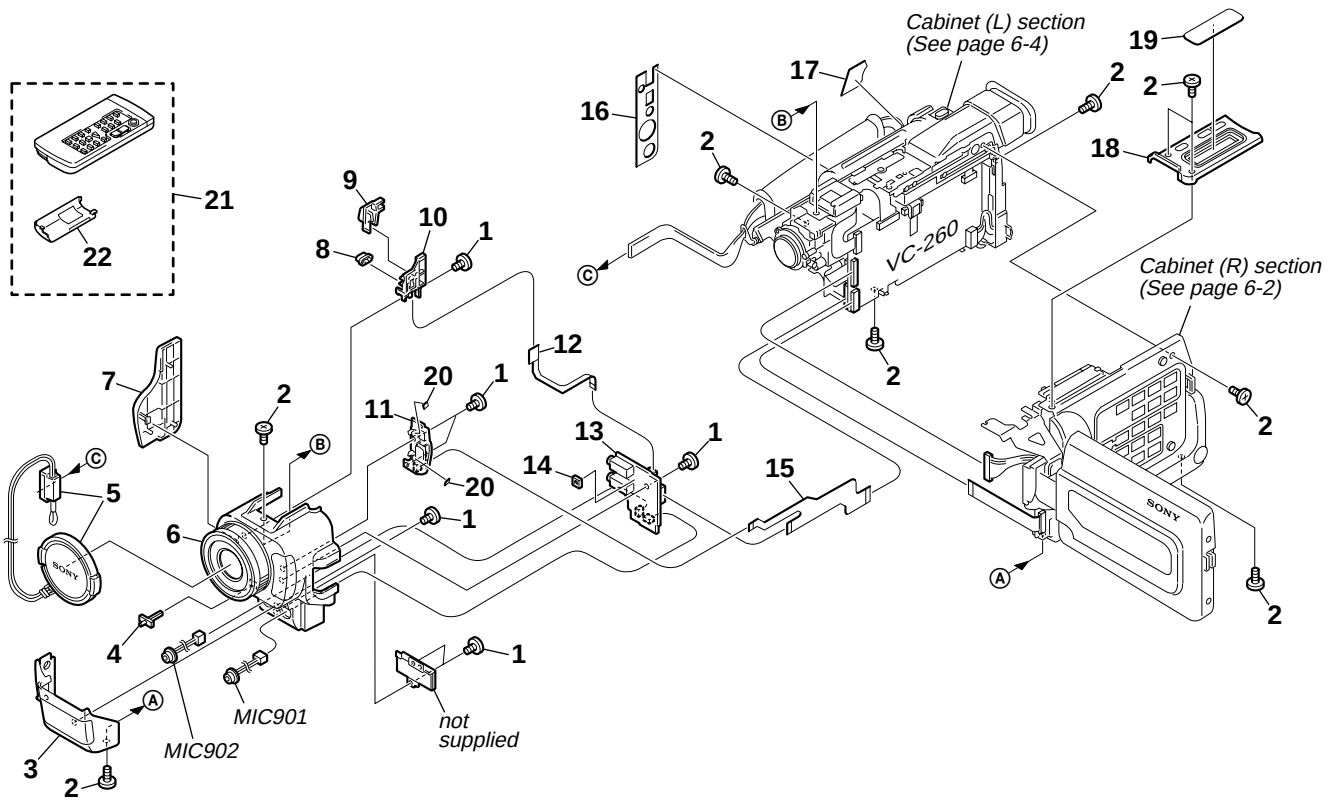
NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Abbreviation
  CND : Canadian model
  KR : Korea model
  HK : Hong Kong model
  AR : Argentina model
  BR : Brazilian model
  JE : Tourist model

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

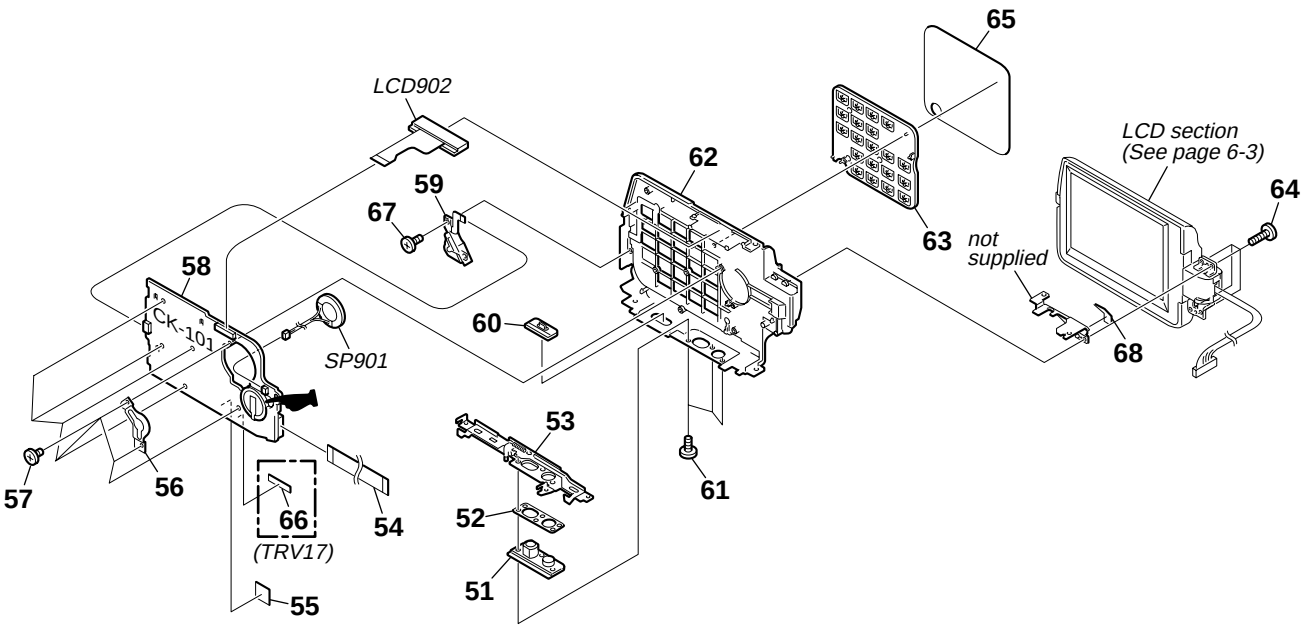
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

6-1-1. OVERALL SECTION



Ref. No.	Part No.	Description	Remarks
1	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
2	3-989-735-81	SCREW (M1.7), LOCK ACE, P2	
3	X-3951-424-1	PANEL (S) ASSY, FRONT (TRV15/TRV17:US,CND,E,HK,AR,JE,KR)	
3	X-3951-718-1	PANEL (S) ASSY, FRONT (TRV17:BR)	
4	3-066-838-01	LIGHT, TALLY GUIDE	
5	X-3950-537-1	CAP ASSY, LENS	
6	X-3951-423-1	PANEL ASSY, FRONT	
7	3-066-839-01	COVER, JACK	
8	3-066-834-01	BUTTON, SNS	
9	3-066-832-01	NS SW	
10	3-066-833-01	BASE, NS	
11	A-7074-773-A	FB-218 BOARD, COMPLETE	
12	A-7074-780-A	FP-311 FLEXIBLE BOARD, COMPLETE	
13	A-7074-774-A	MA-403 (R) BOARD, COMPLETE	
* 14	3-057-438-11	CUSHION, LIGHT INTERCEPTION	
15	1-681-258-11	FP-304 FLEXIBLE BOARD	
16	3-066-737-01	PLATE, JACK ORNAMENTAL (TRV17)	
16	3-066-737-21	PLATE, JACK ORNAMENTAL (TRV15)	
17	3-067-081-11	SHEET, POWER (TRV17)	
17	3-067-081-21	SHEET, POWER (TRV15)	
18	X-3951-426-1	CABINET ASSY, TOP	
19	3-066-843-01	WINDOW, INDICATION	
20	3-069-101-01	SHEET, SENSOR	
21	1-475-141-61	REMOTE COMMANDER (RMT-814)	
22	3-742-854-01	LID, BATTERY CASE (FOR RMT-814)	
MIC901	1-542-312-11	MICROPHONE (Lch)	
MIC902	1-542-312-11	MICROPHONE (Rch)	

6-1-2. CABINET (R) SECTION

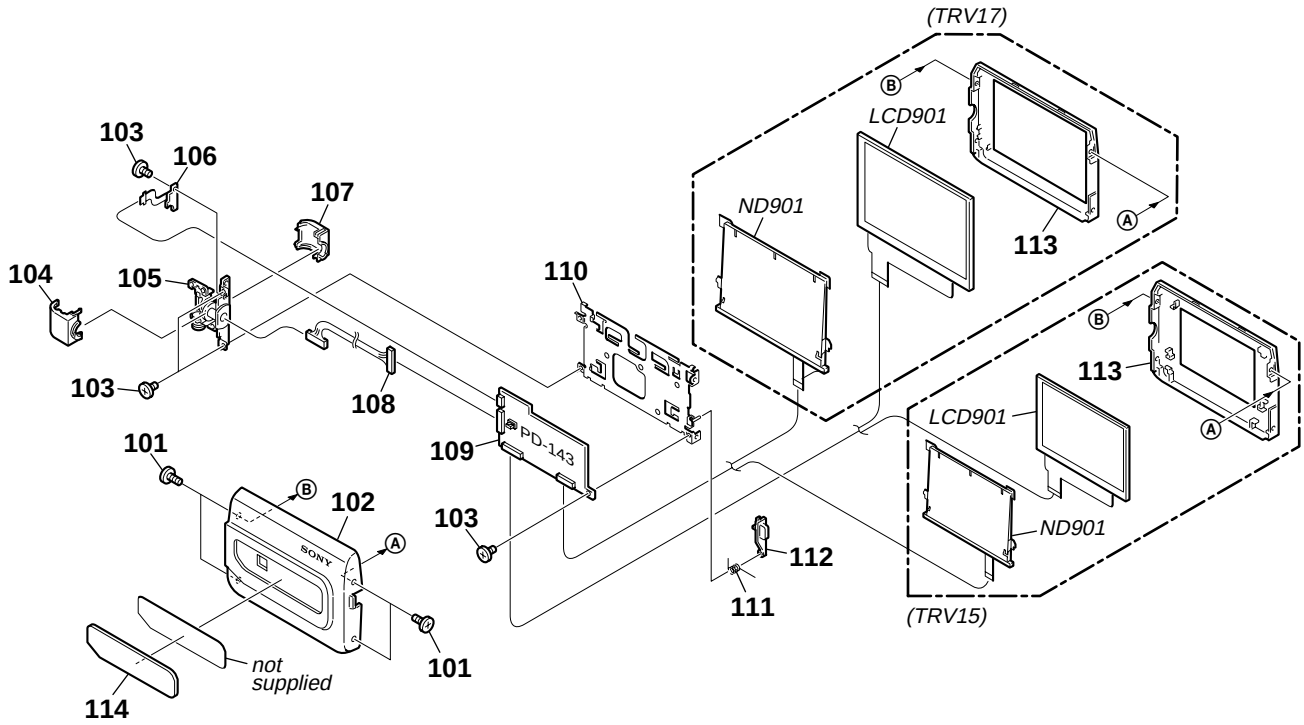


: BT8301 (Lithium battery) CK-101 board on the mount position. (See page 4-67)

Ref. No.	Part No.	Description	Remarks
51	3-055-257-01	TRIPOD (LARGE)	
* 52	3-055-258-01	SHEET, TRIPOD INSULATNG	
53	X-3951-440-1	FRAME ASSY, BOTTOM	
54	1-757-770-11	CABLE, FLEXIBLE BOARD FLAT (FFC-314)	
* 55	3-055-885-01	SHEET, MUFFLE	
* 56	X-3950-471-1	RETAINER ASSY, SPEAKER	
57	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
58	A-7074-771-A	CK-101 (FBFBIO) BOARD, COMPLETE (TRV17)	
58	A-7074-861-A	CK-101 (FBIO) BOARD, COMPLETE (TRV15)	
59	1-476-580-11	SWITCH BLOCK, CONTROL (KP-1700)	
60	3-055-324-01	KNOB, EJECT	
61	3-055-573-01	SCREW (M1.7), LOCK ACE, P2	

Ref. No.	Part No.	Description	Remarks
62	X-3951-422-1	CABINET (R) ASSY	
63	X-3951-437-1	BUTTON ASSY, VTR (TRV17)	
63	X-3951-550-1	BUTTON ASSY, VTR (TRV15)	
64	3-945-884-11	SCREW (2X6)	
65	3-066-738-01	SHEET, KEY (TRV17)	
65	3-066-738-21	SHEET, KEY (TRV15)	
66	3-068-839-01	SHEET, FOCUS (TRV17)	
67	3-713-791-11	SCREW (M1.7X5), TAPPING, P2	
68	3-841-069-11	SPACER	
LCD902	A-7096-661-A	INDICATION LCD BLOCK ASSY	
SP901	1-529-590-11	SPEAKER (2.0CM)	

6-1-3. LCD SECTION

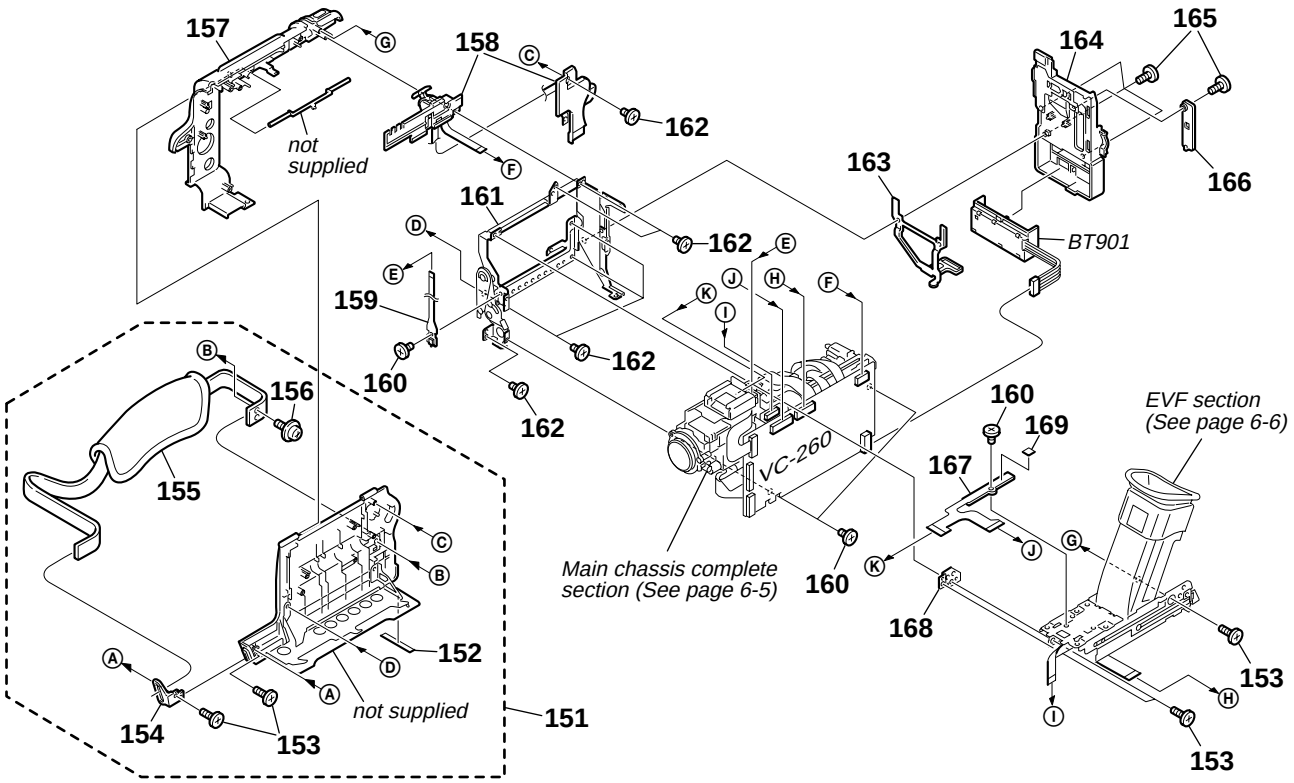


Ref. No.	Part No.	Description	Remarks
101	3-968-729-91	SCREW (M2), LOCK ACE, P2	
102	X-3951-421-1	CABINET (C) ASSY, P	
103	4-974-725-01	SCREW (M1.7X2.5), P	
104	3-066-822-01	COVER (FRONT), HINGE	
105	X-3951-724-1	HINGE ASSY (1730)	
106	A-7074-778-A	FP-309 FLEXIBLE BOARD, COMPLETE	
107	3-066-823-01	COVER (REAR), HINGE	
108	1-961-121-11	HARNESS (PV-130)	
109	A-7074-772-A	PD-143 (35SH123) BOARD, COMPLETE	(TRV17)
109	A-7074-863-A	PD-143 (25SH123) BOARD, COMPLETE	(TRV15)
110	X-3951-420-1	FRAME ASSY (3.5), P (TRV17)	
110	X-3951-547-1	FRAME ASSY (2.5), P (TRV15)	

Ref. No.	Part No.	Description	Remarks
111	3-059-740-01	SPRING (P), TORSION	
112	3-059-739-01	BUTTON, PANEL OPEN	
113	3-067-753-01	CABINET (M) (2.5), P (TRV15)	
113	3-066-821-01	CABINET (M) (3.5), P (TRV17)	
114	3-066-736-01	PLATE, P ORNAMENTAL (TRV17)	
114	3-066-736-21	PLATE, P ORNAMENTAL (TRV15)	
LCD901	1-803-853-21	INDICATOR MODULE LIQUID CRYST (2.5)	(TRV15)
LCD901	1-803-855-21	INDICATOR MODULE LIQUID CRYST (3.5)	(TRV17)
⚠ND901	1-517-855-31	TUBE, FLUORESCENT,COLD CATHODE (3.5)	(TRV17)
⚠ND901	1-518-725-31	TUBE, FLUORESCENT,COLD CATHODE (2.5)	(TRV15)

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

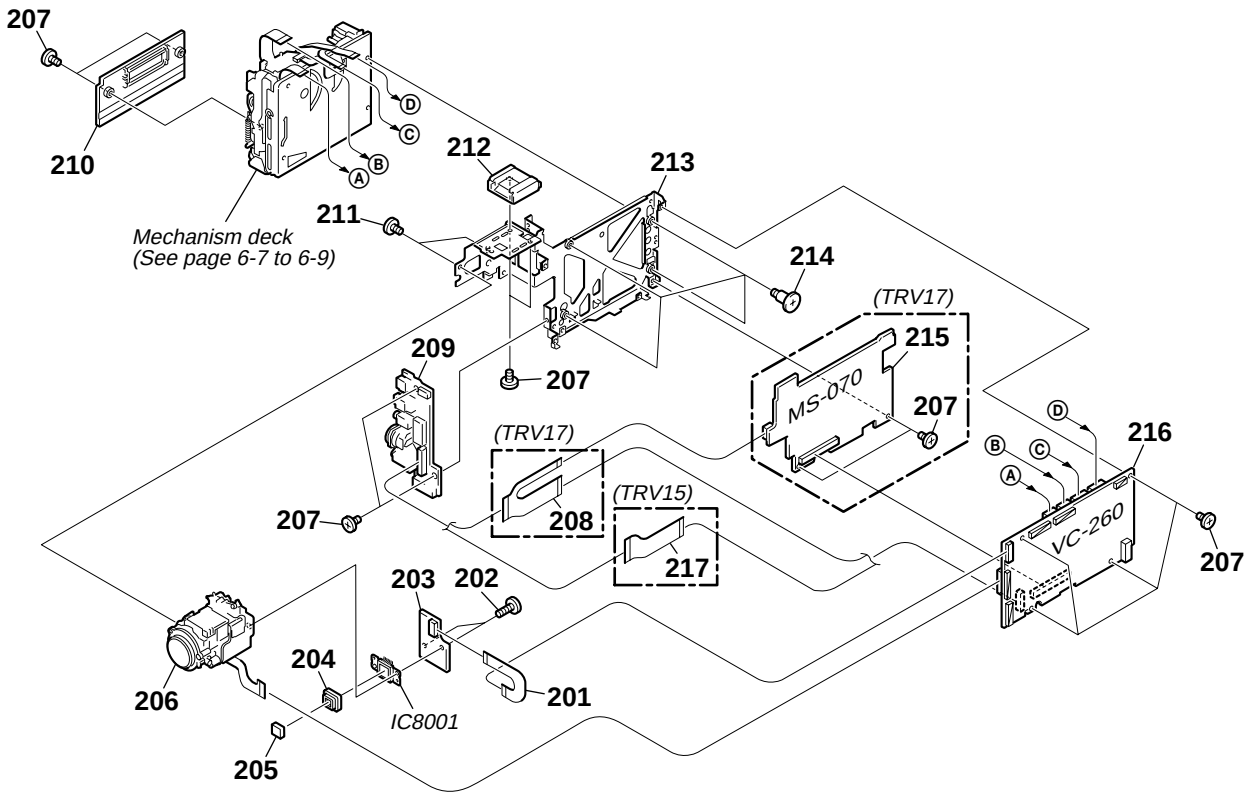
6-1-4. CABINET (L) SECTION



Ref. No.	Part No.	Description	Remarks
151	X-3951-427-1	CABINET ASSY, GRIP (TRV17)	
151	X-3951-548-1	CABINET ASSY, GRIP (TRV15)	
* 152	3-055-189-01	FOOT (A)	
153	3-713-791-11	SCREW (M1.7X5), TAPPING, P2	
154	3-059-825-01	BRACKET (FRONT), GRIP BELT	
155	3-061-550-01	BELT, GRIP	
156	3-679-362-11	SCREW	
157	X-3951-419-1	CABINET (L) ASSY (TRV17)	
157	X-3951-549-1	CABINET (L) ASSY (TRV15)	
158	1-476-579-11	SWITCH BLOCK, CONTROL (PS-1700)	
159	A-7074-779-A	FP-310 FLEXIBLE BOARD, COMPLETE	

Ref. No.	Part No.	Description	Remarks
160	4-974-725-01	SCREW (M1.7X2.5), P	
161	X-3951-438-1	FRAME ASSY, CS	
162	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
163	3-067-024-01	BRACKET (LOWER), STRAP	
164	X-3951-428-1	PANEL ASSY, BT	
165	3-989-735-81	SCREW (M1.7), LOCK ACE, P2	
166	3-067-025-01	CPC LID	
167	A-7074-777-A	FP-305 FLEXIBLE BOARD, COMPLETE	
168	3-066-847-01	SPACER, M	
169	3-068-717-01	CUSHION LL	
BT901	1-694-772-11	TERMINAL BOARD, BATTERY	

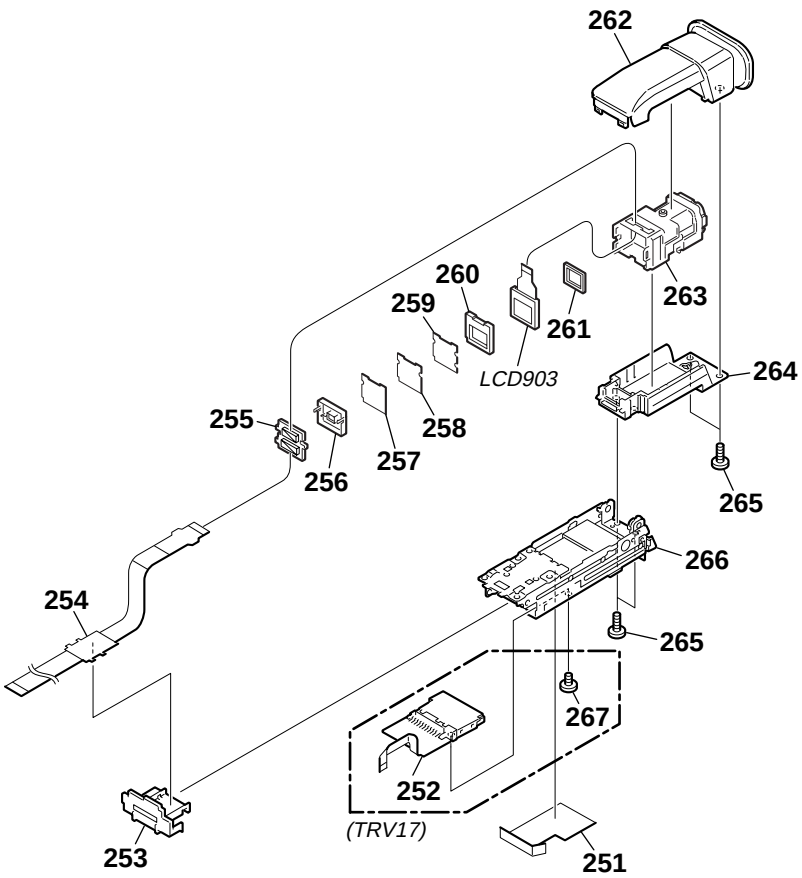
6-1-5. MAIN CHASSIS COMPLETE SECTION



Be sure to read “Precautions upon replacing CCD imager” on page 4-10 when changing the CCD imager.

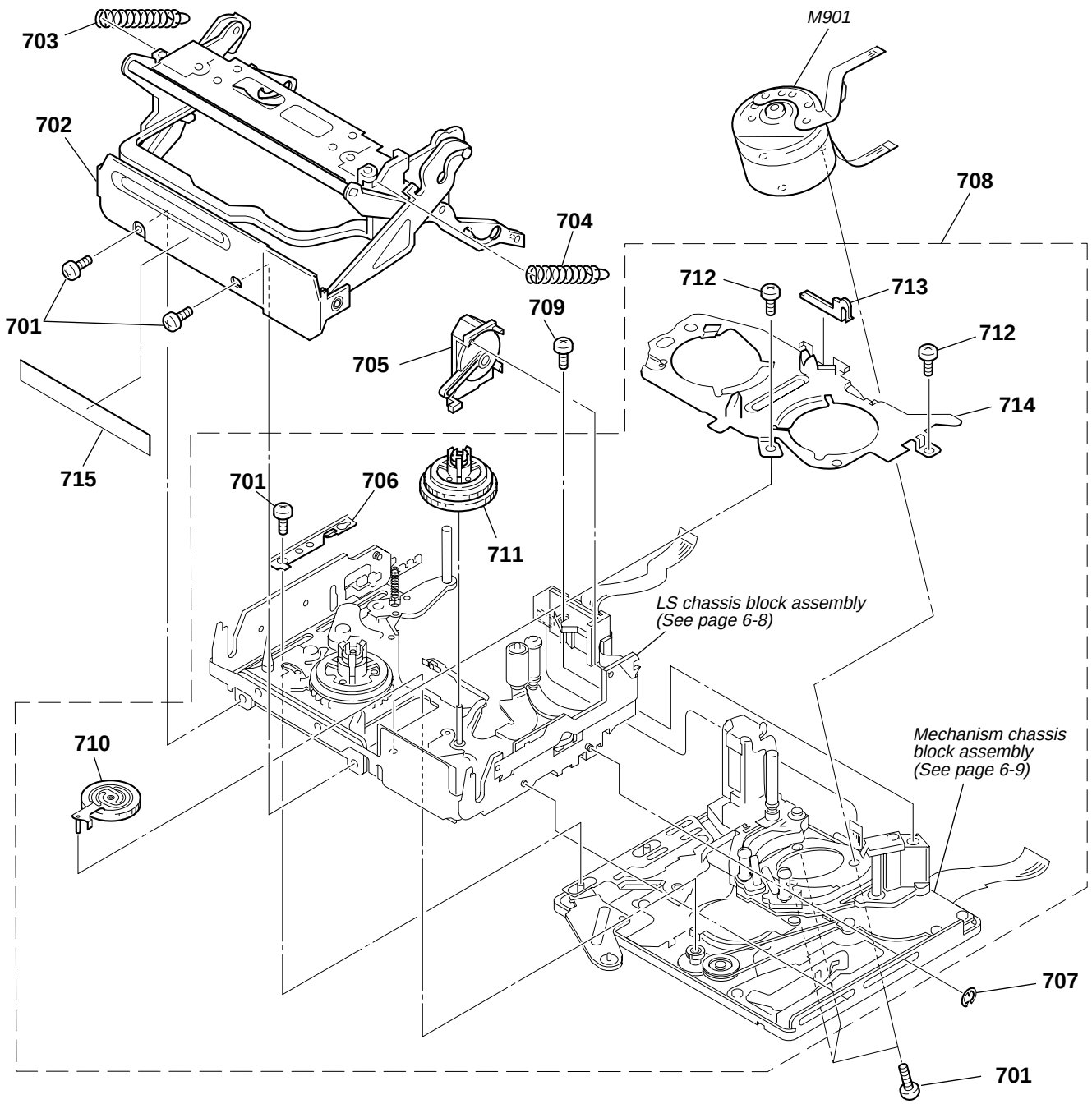
Ref. No.	Part No.	Description	Remarks
201	1-681-260-11	FP-306 FLEXIBLE BOARD	
202	3-713-791-41	SCREW (M1.7X5), TAPPING, P2	
203	A-7074-776-A	CD-303 BOARD, COMPLETE	
204	3-053-973-01	RUBBER (W), SEAL	
205	1-758-155-21	FILTER BLOCK, OPTICAL	
206	8-848-748-01	DEVICE, LENS LSV-650D	
207	4-974-725-01	SCREW (M1.7X2.5), P	
208	1-681-261-11	FP-307 FLEXIBLE BOARD (TRV17)	
209	A-7074-770-A	JK-204 (FBFB) BOARD, COMPLETE (TRV17)	
209	A-7074-862-A	JK-204 (FB) BOARD, COMPLETE (TRV15)	
210	3-059-722-01	COVER, CASSETTE COMPARTMENT	
211	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
212	1-815-124-11	CONNECTOR, EXTERNAL (HOT SHOE) (TRV17)	
212	1-815-124-21	CONNECTOR, EXTERNAL (HOT SHOE) (TRV15)	
213	X-3951-425-1	FRAME ASSY, MAIN	
214	3-059-718-01	SCREW (M1.4X1.5)	
215	A-7074-769-A	MS-070 BOARD, COMPLETE (TRV17)	
216	A-7096-601-A	VC-260 (FBFBIO) BOARD, COMPLETE (SERVICE)(TRV17)	
216	A-7096-703-A	VC-260 (FBIO) BOARD, COMPLETE (SERVICE) (TRV15)	
217	1-681-267-11	FP-314 FLEXIBLE BOARD (TRV15)	
IC8001	A-7031-244-A	CCD BLOCK ASSY (CCD IMAGER)	

6-1-6. EVF SECTION



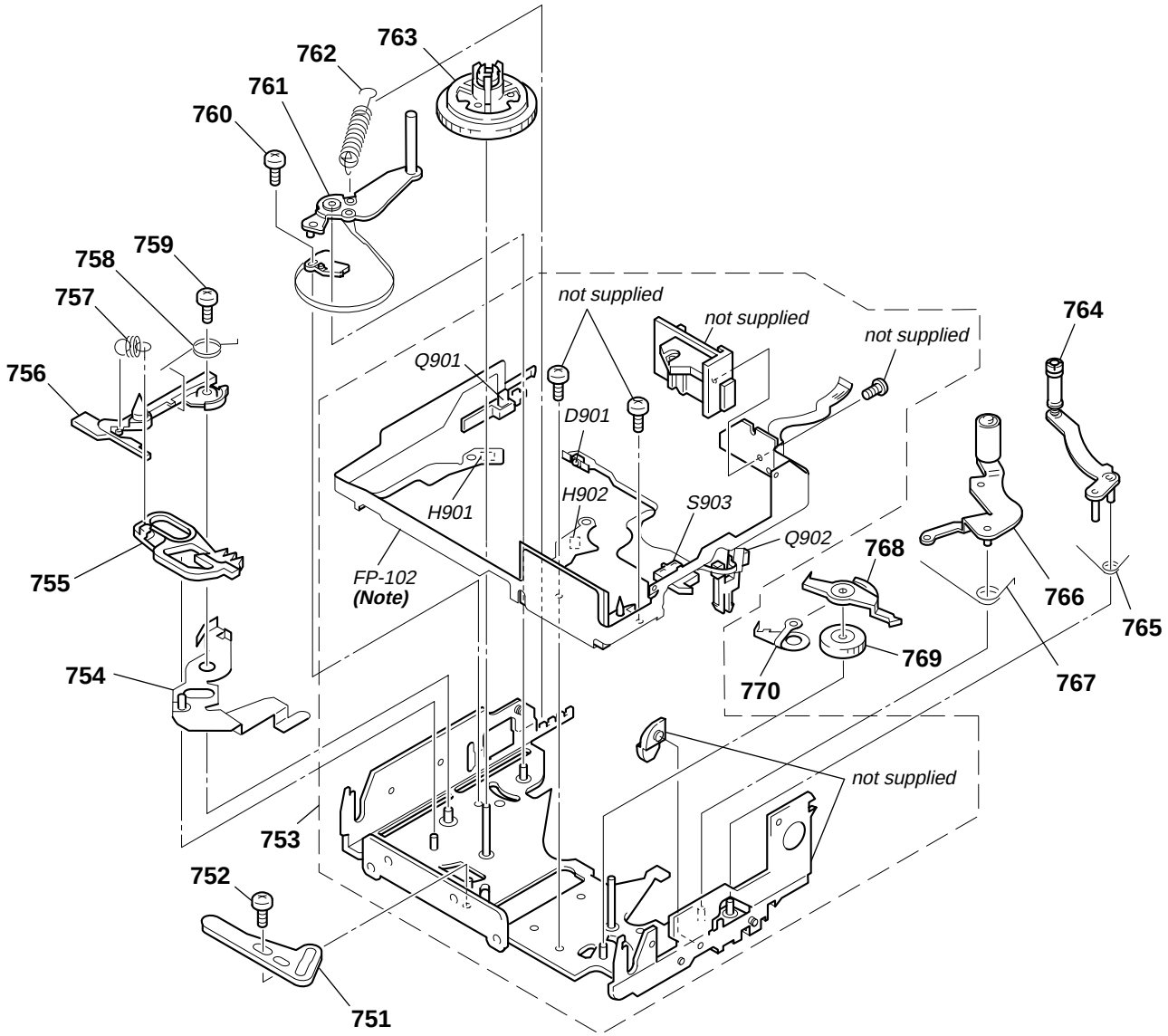
Ref. No.	Part No.	Description	Remarks
251	3-067-819-01	SHEET, VF FLEXIBLE BOARD RETAINER	
252	A-7074-781-A	FP-313 FLEXIBLE BOARD, COMPLETE (TRV17)	
253	3-067-067-01	GUIDE, VF FLEXIBLE BOARD	
254	1-681-268-11	FP-320 FLEXIBLE BOARD	
255	A-7074-775-A	LB-069 BOARD, COMPLETE	
256	3-065-058-01	GUIDE, LAMP	
257	3-065-059-01	ILLUMINATOR (1)	
258	3-065-061-01	SHEET (2) (138), PRISM	
259	3-065-060-01	SHEET (1) (138), PRISM	
260	3-065-062-01	CUSHION (138), LCD	
261	3-059-734-01	CUSHION (1), LCD	
262	X-3951-451-1	CABINET (UPPER) ASSY, VF	
263	X-3951-453-1	LENS ASSY, VF	
264	X-3951-452-1	CABINET (LOWER) ASSY, VF	
265	3-713-791-11	SCREW (M1.7X5), TAPPING, P2	
266	X-3951-441-1	BASE ASSY, VF (TRV17)	
266	X-3951-559-1	BASE ASSY, VF (TRV15)	
267	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2 (TRV17)	
LCD903	8-753-028-47	LCX032AN-J	

6-1-7. OVERALL MECHANISM DECK SECTION (J100)



Ref. No.	Part No.	Description	Remarks
701	3-703-816-14	SCREW (M1.4)	
702	X-3950-369-2	CASSETTE COMPARTMENT ASSY	
703	3-059-082-01	SPRING, TENSION (CASSETTE COMPARTMENT S)	
704	3-059-208-01	SPRING (CASSETTE COMPARTMENT T)	
705	X-3950-370-3	DAMPER ASSY	
706	3-059-101-03	RETAINER, LS GUIDE	
707	7-624-102-04	STOP RING 1.5, TYPE -E	
708	A-7028-133-B	MD (J100) SUB ASSY (K)	
709	3-703-816-41	SCREW (M1.4X2.5), SPECIAL HEAD	
710	X-3950-364-1	GEAR ASSY, GOOSENECK	
711	X-3950-366-1	TABLE ASSY, T REEL	
712	3-059-100-01	SCREW (M1.4X1.4), SPECIAL HEAD	
713	3-059-093-01	RETAINER, LED	
714	X-3950-361-1	PLATE ASSY, RETAINER	
715	3-059-725-01	LABEL, LS	
M901	A-7048-940-A	DRUM (DEH-18A-R) (SERVICE)	

6-1-8. LS CHASSIS BLOCK ASSEMBLY

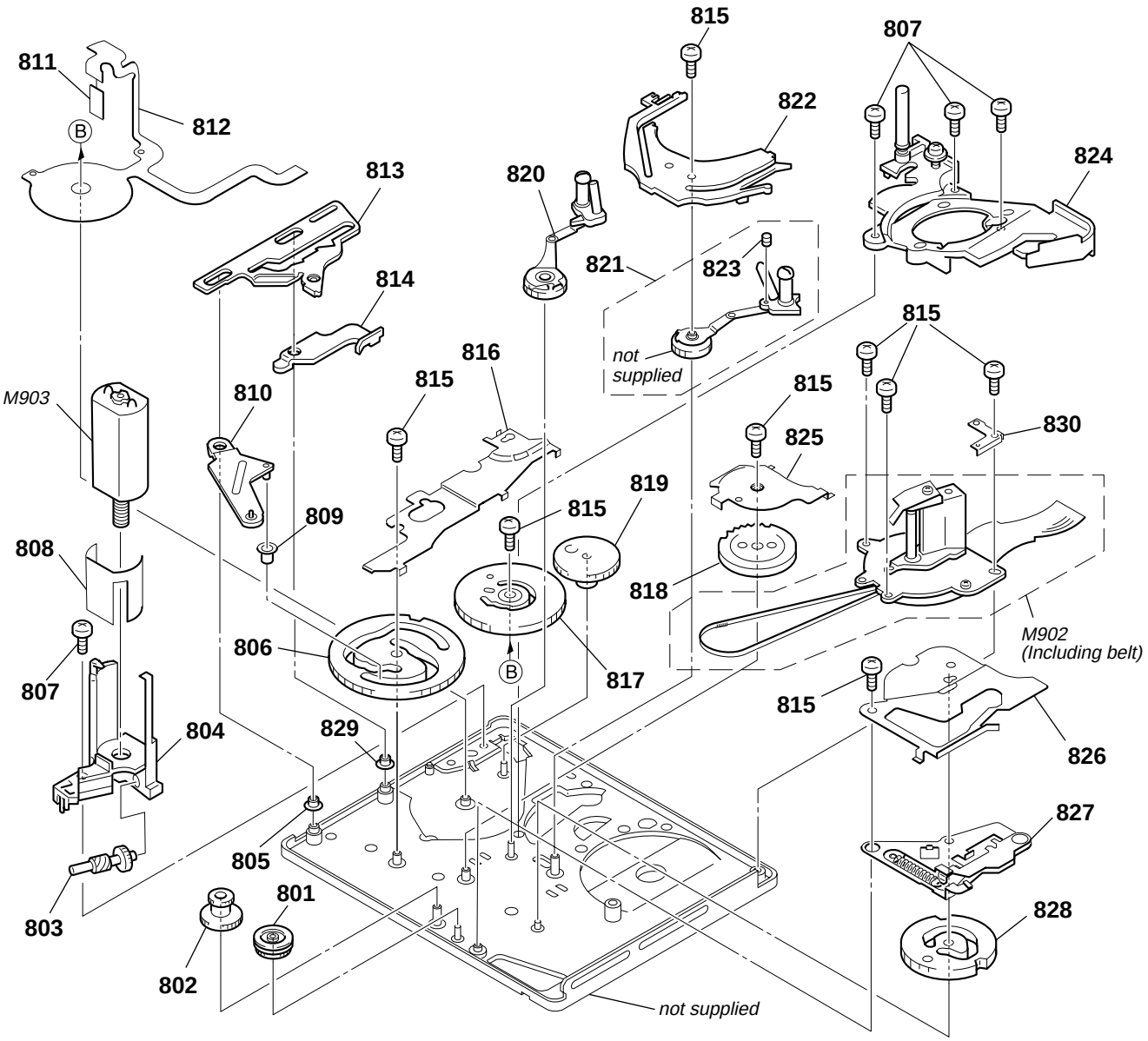


Note: *FP-102 is included in the LS sub assy and is attached to chassis by hot-press.*
Because installation of FP-102 requires a very high accuracy, FP-102 is not supplied as an independent service parts.

Ref. No.	Part No.	Description	Remarks
751	3-059-173-01	PLATE, LS CAM	
752	3-059-100-01	SCREW (M1.4X1.4), SPECIAL HEAD	
753	A-7094-816-B	LS BLOCK ASSY	
754	X-3950-371-1	ARM ASSY, BRAKE (S) DRIVING	
755	3-059-166-01	BRAKE (S)	
756	3-059-146-01	POSITIONING (S), CASSETTE	
757	3-059-167-01	SPRING (BRAKE S), TENSION COIL	
758	3-059-169-01	SPRING (BRAKE S ARM), TORSION	
759	3-703-816-14	SCREW (M1.4)	
760	3-059-090-01	SCREW (M1.4X2.5), SPECIAL HEAD	
* 761	X-3950-358-4	TG1 ASSY	
762	3-059-156-01	SPRING (TENSION REGULATOR)	
763	X-3950-365-2	TABLE ASSY, S REEL	

Ref. No.	Part No.	Description	Remarks
764	A-7094-819-A	TG7 BLOCK ASSY	
765	3-059-165-01	SPRING (TG7 RETURN), TORSION	
766	X-3950-359-1	ARM ASSY, PINCH	
767	3-059-161-01	SPRING (PINCH RETURN), TORSION	
768	3-059-170-01	BRAKE (T)	
769	3-059-171-01	GEAR (T), BRAKE	
770	3-059-172-01	SPRING (T), BRAKE	
D901	8-719-078-71	DIODE LA57A, SO (TAPE LED)	
H901	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (S REEL)	
H902	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (T REEL)	
Q901	8-729-028-71	TRANSISTOR, PN166, SO (TAPE END)	
Q902	8-729-028-71	TRANSISTOR, PN166, SO (TAPE TOP)	
S903	1-572-288-11	SWITCH, PUSH (C.C. DOWN)	

6-1-9. MECHANISM CHASSIS BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remarks
801	3-059-211-01	GEAR, CONVERSION	
802	3-059-220-01	GEAR, RELAY	
803	3-059-187-01	SHAFT, WORM	
804	3-059-186-03	HOLDER, MOTOR	
805	3-060-002-01	ROLLER, LS GUIDE	
806	3-059-189-01	GEAR (A), CAM	
807	3-703-816-41	SCREW (M1.4X2.5), SPECIAL HEAD	
808	3-059-225-01	SHIELD, MOTOR	
809	3-059-191-01	ROLLER, LS	
810	3-059-190-01	ARM, LS	
811	1-677-049-11	FP-228 FLEXIBLE BOARD (DEW SENSOR)	
812	1-677-084-11	FP-100 FLEXIBLE BOARD	
813	3-059-149-01	SLIDER, TG1 CAM	
814	3-059-148-01	ARM, TG1 DRIVING	
815	3-703-816-14	SCREW (M1.4)	
816	3-059-117-01	COVER (A), GEAR	
817	X-3950-367-1	GEAR ASSY, MODE	

Ref. No.	Part No.	Description	Remarks
818	3-059-139-01	GEAR, GL DRIVING	
819	3-059-188-01	GEAR, DECELERATION	
820	A-7094-818-A	COASTER (S) BLOCK ASSY	
821	A-7094-817-A	COASTER (T) BLOCK ASSY	
822	3-059-126-01	RAIL, GUIDE	
823	3-962-914-01	SCREW (M1.4X2)	
824	A-7094-822-A	DRUM BASE BLOCK ASSY	
825	3-059-118-01	COVER (B), GEAR	
826	3-059-083-01	COVER (C), GEAR	
827	X-3950-368-1	ARM ASSY, PINCH DRIVING	
828	3-059-192-01	GEAR (B), CAM	
829	3-063-355-01	ROLLER (S1), LS GUIDE	
830	3-065-202-01	SUPPORT, TG7	
M902	8-835-685-01	MOTOR, DC SCD18A/C-NP (INCLUDING BELT) (CAPSTAN)	
M903	A-7094-823-A	MOTOR BLOCK ASSY (LOADING)	

6-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: µF
- COILS
  uH: µH
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...
- Abbreviation
  CND : Canadian model
  KR : Korea model
  HK : Hong Kong model
  AR : Argentina model
  BR : Brazilian model
  JE : Tourist model

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remarks
	A-7074-776-A	CD-303 BOARD, COMPLETE			
		**********			
		(Ref.No.;10000Series)			
		(IC8001 is not included in this COMPLETE board.)			
		< CAPACITOR >			
C8001	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C8003	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C8004	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C8005	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
		< CONNECTOR >			
CN8001	1-815-315-11	CONNECTOR, FFC/FPC 16P			
		< IC >			
IC8001	A-7031-244-A	CCD BLOCK ASSY (CCD IMAGER)			
		< COIL >			
L8001	1-414-406-11	INDUCTOR	220uH		
		< TRANSISTOR >			
Q8001	8-729-117-73	TRANSISTOR	2SC4178-F13F14-T1		
		< RESISTOR >			
R8001	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
	A-7074-771-A	CK-101 (FBFBIO) BOARD, COMPLETE (TRV17)			
		**********			
	A-7074-861-A	CK-101 (FBIO) BOARD, COMPLETE (TRV15)			
		**********			
		(Ref.No.;10000Series)			
BT8301	1-528-724-21	BATTERY, V/L RICHARGEABLE			
		< CAPACITOR >			
C8401	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		< CONNECTOR >			
CN8301	1-766-348-21	CONNECTOR, FFC/FPC 18P			
CN8302	1-778-506-21	PIN, CONNECTOR (PC BOARD) 2P			
CN8303	1-691-344-11	CONNECTOR, FFC/FPC (ZIF) 6P			
CN8401	1-766-350-21	CONNECTOR, FFC/FPC 20P			
		< DIODE >			
D8301	8-719-062-16	DIODE 01ZA8.2(TPL3)			
D8305	8-719-062-16	DIODE 01ZA8.2(TPL3)			
D8306	8-719-062-16	DIODE 01ZA8.2(TPL3)			
		< IC >			
IC8401	8-759-573-02	IC BU9735K-E2			
		< RESISTOR >			
R8301	1-216-864-91	SHORT	0		
R8303	1-216-821-11	METAL CHIP	1K	5%	1/16W
R8309	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R8310	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R8311	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R8312	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R8313	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R8314	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R8315	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R8319	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R8318	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TRV17)
R8320	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R8321	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R8323	1-216-828-11	METAL CHIP	3.9K	5%	1/16W (TRV17)
R8324	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R8325	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R8326	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R8328	1-216-838-11	METAL CHIP	27K	5%	1/16W
R8329	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R8330	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R8331	1-216-823-11	METAL CHIP	1.5K	5%	1/16W (TRV17)
R8332	1-216-832-11	METAL CHIP	8.2K	5%	1/16W (TRV17)
R8333	1-216-838-11	METAL CHIP	27K	5%	1/16W (TRV17)
R8334	1-216-822-11	METAL CHIP	1.2K	5%	1/16W (TRV17)
R8335	1-216-838-11	METAL CHIP	27K	5%	1/16W
R8336	1-216-802-11	RES-CHIP	27	5%	1/16W
R8401	1-216-814-11	METAL CHIP	270	5%	1/16W
R8402	1-216-855-11	METAL CHIP	680K	5%	1/16W

Be sure to read "Precautions upon replacing CCD imager" on page 4-10 when changing the CCD imager.

Ref. No.	Part No.	Description	Remarks
		< SWITCH >	
S8301	1-786-157-11	SWITCH, TACTILE (REC)	
S8302	1-692-247-11	SWITCH, TACTIL (2 CLICK)(FOCUS(INFINITY))	
S8303	1-786-157-11	SWITCH, TACTILE (VOLUME-)	
S8304	1-786-157-11	SWITCH, TACTILE (PLAY)	
S8305	1-786-157-11	SWITCH, TACTILE (AUDIO DUB)	
S8306	1-786-157-11	SWITCH, TACTILE (RESET)	
S8307	1-786-157-11	SWITCH, TACTILE (VOLUME+)	
S8308	1-786-157-11	SWITCH, TACTILE (REC)	
S8309	1-786-157-11	SWITCH, TACTILE (REW)	
S8310	1-786-157-11	SWITCH, TACTILE (-) (TRV17)	
S8311	1-786-157-11	SWITCH, TACTILE (DISPLAY)	
S8312	1-786-157-11	SWITCH, TACTILE (FF)	
S8313	1-786-157-11	SWITCH, TACTILE (FADER)	
S8314	1-786-157-11	SWITCH, TACTILE (MPEG) (TRV17)	
S8316	1-786-157-11	SWITCH, TACTILE (END SEARCH)	
S8317	1-786-157-11	SWITCH, TACTILE (PAUSE)	
S8318	1-786-157-11	SWITCH, TACTILE (BACK LIGHT)	
S8319	1-786-157-11	SWITCH, TACTILE (PLAY) (TRV17)	
S8320	1-786-157-11	SWITCH, TACTILE (MEMORY MIX) (TRV17)	
S8321	1-786-157-11	SWITCH, TACTILE (PLAY ZOOM)	
S8322	1-786-157-11	SWITCH, TACTILE (STOP)	
S8323	1-786-157-11	SWITCH, TACTILE (EXPOSURE)	
S8324	1-786-148-11	SWITCH, PUSH (1 KEY) ((PANEL)OPEN)	
S8325	1-786-157-11	SWITCH, TACTILE (INDEX) (TRV17)	
S8326	1-786-157-11	SWITCH, TACTILE (DELETE) (TRV17)	
S8327	1-786-157-11	SWITCH, TACTILE (MENU)	
S8328	1-786-157-11	SWITCH, TACTILE (+) (TRV17)	

	A-7074-773-A	FB-218 BOARD, COMPLETE			
		**********			
					(Ref.No.;10000Series)
		< CAPACITOR >			
C8201	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C8205	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C8206	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V
C8207	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C8208	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C8209	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C8210	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		< CONNECTOR >			
CN8201	1-779-328-21	CONNECTOR, FFC/FPC 8P			
		< DIODE >			
D8201	8-719-067-44	DIODE CL-310IRS-X-TU			
D8202	8-719-083-13	DIODE DCS2815			
D8203	8-719-016-74	DIODE 1SS352-TPH3			
		< IC >			
IC8201	8-749-012-83	IC PNA4S13M02S0			
		< COIL >			
L8201	1-469-525-91	INDUCTOR	10uH		

Ref. No.	Part No.	Description			Remarks
		< PHOTO INTERRUPTER >			
PH8201	8-749-014-54	HIC CNA1312K01S0			
PH8202	8-749-014-54	HIC CNA1312K01S0			
		< TRANSISTOR >			
Q8201	8-729-140-75	TRANSISTOR	2SD999-T1-CLCK		
		< RESISTOR >			
R8201	1-216-800-11	RES-CHIP	18	5%	1/16W
R8202	1-216-001-00	METAL CHIP	10	5%	1/10W
R8206	1-216-815-11	METAL CHIP	330	5%	1/16W
R8207	1-216-864-91	SHORT	0		
R8208	1-216-295-11	SHORT	0		

		FP-102 FLEXIBLE BOARD (Not supplied)			
		**********			
		< DIODE >			
D901	8-719-078-71	DIODE LN57A.SO (TAPE LED)			
		< HOLE ELEMENT >			
H901	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (S REEL)			
H902	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (T REEL)			
		< TRANSISTOR >			
Q901	8-729-028-71	TRANSISTOR	PN166.SO (TAPE END)		
Q902	8-729-028-71	TRANSISTOR	PN166.SO (TAPE TOP)		
		< SWITCH >			
S903	1-771-326-41	PUSH SWITCH (1 KEY) (C.C. DOWN)			

	A-7074-777-A	FP-305 FLEXIBLE BOARD, COMPLETE			
		**********			
					(Ref.No.;10000Series)
		< DIODE >			
D100	8-719-074-30	DIODE SML-310LTT86			
		< RESISTOR >			
R0100	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R0101	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
		< SWITCH >			
S100	1-786-157-11	SWITCH, TACTILE (SUPER LASER LINK)			
S101	1-786-157-11	SWITCH, TACTILE (EDIT SEARCH +)			
S102	1-786-157-11	SWITCH, TACTILE (EDIT SEARCH -)			

	A-7074-778-A	FP-309 FLEXIBLE BOARD, COMPLETE			
		**********			
		< SWITCH >			
S501	1-771-331-61	SWITCH, PUSH (1KEY) (PANEL REVERSE)			

FP-310 **FP-311** **FP-313** **JK-204** **LB-069**

Ref. No.	Part No.	Description	Remarks
	A-7074-779-A	FP-310 FLEXIBLE BOARD, COMPLETE **********	
		< SWITCH >	
S601	1-771-733-31	SWITCH, PUSH (1KEY) (OPEN/EJECT)	
	A-7074-780-A	FP-311 FLEXIBLE BOARD, COMPLETE **********	
		< SWITCH >	
S701	1-786-157-11	SWITCH, TACTILE (SUPER NIGHTSHOT)	
	A-7074-781-A	FP-313 FLEXIBLE BOARD, COMPLETE (TRV17) **********	
		< CONNECTOR >	
CN900	1-794-262-11	CONNECTOR, MEMORY STICK	
	A-7074-770-A	JK-204 (FBFB) BOARD, COMPLETE (TRV17) **********	
	A-7074-862-A	JK-204 (FB) BOARD, COMPLETE (TRV15) **********	(Ref.No.;10000Series)
		< CONNECTOR >	
CN3101	1-785-806-12	CONNECTOR, SQUARE TYPE (INDI 4P)	(DV IN/OUT)
CN3102	1-794-052-21	CONNECTOR, FFC/FPC 32P	
CN3103	1-794-962-11	CONNECTOR, SQUARE TYPE (USB 5P) (USB)	(TRV17)
CN3104	1-766-335-21	CONNECTOR, FFC/FPC 5P	
		< DIODE >	
D3101	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D3103	8-719-056-85	DIODE UDZSTE-178.2B	(TRV17)
D3104	8-719-062-16	DIODE 01ZA8.2(TPL3)	(TRV17)
D3106	8-719-056-85	DIODE UDZSTE-178.2B	
D3107	8-719-074-30	DIODE SML-310LTT86	(TRV17)
		< FERRITE BEAD >	
FB3101	1-500-444-11	FERRITE 0uH	
FB3102	1-500-444-11	FERRITE 0uH	
FB3103	1-500-444-11	FERRITE 0uH	
FB3104	1-500-444-11	FERRITE 0uH	
FB3105	1-500-444-11	FERRITE 0uH	
FB3106	1-469-179-21	FERRITE 0uH	
FB3107	1-469-179-21	FERRITE 0uH	
FB3108	1-469-179-21	FERRITE 0uH	
FB3109	1-469-179-21	FERRITE 0uH	
FB3110	1-469-179-21	FERRITE 0uH	
		< JACK >	
J3101	1-793-995-11	JACK, SUPER SMALL TYPE (LANC)	
J3102	1-694-651-11	TERMINAL BOARD (S VIDEO A/V)	

Ref. No.	Part No.	Description	Remarks
		< RESISTOR >	
R3104	1-216-864-91	SHORT 0	
R3105	1-216-864-91	SHORT 0	
R3106	1-216-864-91	SHORT 0	
R3107	1-216-864-91	SHORT 0	
R3108	1-216-864-91	SHORT 0	(TRV17)
R3109	1-216-864-91	SHORT 0	(TRV17)
R3110	1-216-864-91	SHORT 0	(TRV17)
R3111	1-216-864-91	SHORT 0	(TRV17)
		< SENSOR >	
SE3101	1-418-252-11	SENSOR, ANGULAR VELOCITY (YAW)	(TRV17)
SE3101	1-803-042-31	SENSOR, ANGULAR VELOCITY (YAW)	(TRV15)
SE3102	1-418-252-21	SENSOR, ANGULAR VELOCITY (PITCH)	(TRV17)
SE3102	1-803-042-41	SENSOR, ANGULAR VELOCITY (PITCH)	(TRV15)
		< VARISTOR >	
VD3101	1-803-974-21	VARISTOR, CHIP	
VD3102	1-801-923-11	VARISTOR, CHIP	
VD3103	1-803-974-21	VARISTOR, CHIP	
VD3104	1-803-974-21	VARISTOR, CHIP	
VD3105	1-803-974-21	VARISTOR, CHIP	
VD3106	1-803-974-21	VARISTOR, CHIP	
	A-7074-775-A	LB-069 BOARD, COMPLETE **********	(Ref.No.;10000Series)
		< CAPACITOR >	
C702	1-164-505-11	CERAMIC CHIP 2.2uF	16V
		< CONNECTOR >	
CN702	1-691-354-21	CONNECTOR, FFC/FPC (ZIF) 16P	
CN703	1-691-358-21	CONNECTOR, FFC/FPC (ZIF) 20P	
		< DIODE >	
⚠D701	8-719-082-33	DIODE NSCW100-T39	
		< IC >	
IC701	8-759-581-11	IC NJM2125F(TE2)	
		< TRANSISTOR >	
Q701	8-729-054-48	TRANSISTOR HN1B04FE-Y/GR(TPLR3)	
Q702	8-729-054-48	TRANSISTOR RN4983FE(TPLR3)	
		< RESISTOR >	
R701	1-218-883-11	METAL CHIP 33K 0.5%	1/16W
R702	1-218-901-11	METAL CHIP 180K 0.5%	1/16W
R703	1-216-827-11	METAL CHIP 3.3K 5%	1/16W
R704	1-211-977-11	METAL CHIP 22 0.5%	1/16W
R706	1-216-839-11	METAL CHIP 33K 5%	1/16W
		< THERMISTOR >	
TH701	1-810-811-11	THERMISTOR, NTC (1608)	

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remarks
	A-7074-774-A	MA-403 (R) BOARD, COMPLETE			
		**********			
					(Ref.No.;10000Series)
		< CAPACITOR >			
C6204	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C6205	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C6206	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C6207	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C6208	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C6209	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C6210	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C6211	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C6212	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C6213	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C6214	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C6216	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C6217	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C6219	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C6220	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C6221	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C6223	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C6225	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C6226	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C6227	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C6228	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C6230	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C6231	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C6236	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C6237	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C6238	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
C6239	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C6241	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C8502	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		< CONNECTOR >			
* CN8501	1-695-320-21	PIN, CONNECTOR (1.5MM)(SMD) 2P			
* CN8502	1-695-320-21	PIN, CONNECTOR (1.5MM)(SMD) 2P			
CN8503	1-573-356-21	CONNECTOR, FFC/FPC 16P			
CN8504	1-766-335-21	CONNECTOR, FFC/FPC 5P			
		< DIODE >			
D8501	8-719-074-30	DIODE SML-310LTT86			
		< VARISTOR >			
DR8501	1-801-862-11	VARISTOR, CHIP			
DR8502	1-801-862-11	VARISTOR, CHIP			
DR8503	1-801-862-11	VARISTOR, CHIP			
DR8504	1-801-862-11	VARISTOR, CHIP			
		< FERRITE BEAD >			
FB8502	1-500-444-11	FERRITE	0uH		
FB8503	1-500-444-11	FERRITE	0uH		
FB8504	1-500-444-11	FERRITE	0uH		
FB8505	1-500-444-11	FERRITE	0uH		
		< IC >			
IC6201	8-759-679-11	IC BH7870AKV-E2			

Ref. No.	Part No.	Description			Remarks
		< JACK >			
J8501	1-569-950-41	JACK (SMALL TYPE) (HEADPHONES)			
J8502	1-691-737-41	JACK (SMALL TYPE) (MIC(PLUG IN POWER))			
		< COIL >			
L6201	1-469-528-91	INDUCTOR	100uH		
		< RESISTOR >			
R6202	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R6203	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R6204	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R6205	1-216-833-11	METAL CHIP	10K	5%	1/16W
R6206	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R6207	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R6208	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R6209	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R6210	1-216-821-11	METAL CHIP	1K	5%	1/16W
R6211	1-216-821-11	METAL CHIP	1K	5%	1/16W
R6215	1-216-833-11	METAL CHIP	10K	5%	1/16W
R6217	1-216-833-11	METAL CHIP	10K	5%	1/16W
R6218	1-216-837-11	METAL CHIP	22K	5%	1/16W
R6221	1-216-837-11	METAL CHIP	22K	5%	1/16W
R6222	1-216-833-11	METAL CHIP	10K	5%	1/16W
R6223	1-216-833-11	METAL CHIP	10K	5%	1/16W
R6227	1-216-833-11	METAL CHIP	10K	5%	1/16W
R6228	1-216-834-11	METAL CHIP	12K	5%	1/16W
R6229	1-216-845-11	METAL CHIP	100K	5%	1/16W
R6231	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R6234	1-216-864-91	SHORT	0		
R6235	1-216-864-91	SHORT	0		
R8502	1-216-819-11	METAL CHIP	680	5%	1/16W

	A-7074-769-A	MS-070 BOARD, COMPLETE (TRV17)			
		**********			
					(Ref.No.;10000Series)
		< CAPACITOR >			
C1150	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1151	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1154	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1156	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1158	1-164-315-11	CERAMIC CHIP	470PF	2.00%	50V
C1160	1-164-315-11	CERAMIC CHIP	470PF	2.00%	50V
C1161	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1163	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1166	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1167	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1168	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1169	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1170	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1171	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1172	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1173	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1174	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1175	1-162-913-11	CERAMIC CHIP	8PF	0.50PF	50V
C1176	1-162-913-11	CERAMIC CHIP	8PF	0.50PF	50V
C1177	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V

Ref. No.	Part No.	Description			Remarks
C1178	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1180	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1183	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1185	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1189	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1190	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1191	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1192	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1194	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1195	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1196	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1197	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1901	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1902	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1903	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1904	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1905	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1906	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C1907	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1908	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1909	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1910	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1911	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1912	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1914	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1917	1-164-315-11	CERAMIC CHIP	470PF	2.00%	50V
C1991	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C1992	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C1993	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
		< CONNECTOR >			
CN1152	1-766-337-21	CONNECTOR, FFC/FPC 7P			
CN1153	1-766-340-21	CONNECTOR, FFC/FPC 10P			
CN1901	1-774-603-21	CONNECTOR, BOARD TO BOARD 100P			
		< DIODE >			
D1151	8-719-073-01	DIODE MA111-(K8).S0			
D1155	8-719-027-76	DIODE 1SS357-TPH3			
		< FERRITE BEAD >			
FB1151	1-414-813-11	FERRITE	0uH		
FB1152	1-414-813-11	FERRITE	0uH		
FB1153	1-414-813-11	FERRITE	0uH		
FB1154	1-414-813-11	FERRITE	0uH		
FB1155	1-500-282-11	FERRITE	0uH		
FB1156	1-414-813-11	FERRITE	0uH		
FB1157	1-414-813-11	FERRITE	0uH		
FB1158	1-414-813-11	FERRITE	0uH		
FB1902	1-414-813-11	FERRITE	0uH		
FB1903	1-414-813-11	FERRITE	0uH		
FB1904	1-414-813-11	FERRITE	0uH		
FB1991	1-414-813-11	FERRITE	0uH		
		< IC >			
IC1151	8-759-271-88	IC TC7SHU04FU-TE85R			
IC1152	8-759-234-20	IC TC7S08F(TE85R)			
IC1153	6-700-134-01	IC NT56V1616A0T-7-T&R			
IC1154	6-800-180-01	IC MBM29LV400BC-90PFTN-S117-ER			
IC1155	8-759-668-50	IC HD6417197FL77			

Ref. No.	Part No.	Description			Remarks
IC1157	8-759-693-08	IC ML60820TAZ060			
IC1158	8-759-525-53	IC RN5RZ31BA-TL			
IC1159	8-759-082-58	IC TC7W08FU(TE12R)			
IC1160	8-759-082-58	IC TC7W08FU(TE12R)			
IC1901	6-700-025-01	IC MB87J4760PFF-G-BND			
IC1902	6-700-134-01	IC NT56V1616A0T-7-T&R			
IC1991	6-700-139-01	IC R1121N191B-TL			
		< COIL >			
L1151	1-469-528-91	INDUCTOR	100uH		
		< TRANSISTOR >			
Q1153	8-729-042-29	TRANSISTOR	RN1104F(TPL3)		
Q1154	8-729-042-72	TRANSISTOR	RN1107F(TPL3)		
Q1155	8-729-037-53	TRANSISTOR	2SA1832F-Y/GR(TPL3)		
Q1156	8-729-037-61	TRANSISTOR	RN2104F(TPL3)		
Q1159	8-729-042-29	TRANSISTOR	RN1104F(TPL3)		
Q1902	8-729-037-61	TRANSISTOR	RN2104F(TPL3)		
Q1903	8-729-042-29	TRANSISTOR	RN1104F(TPL3)		
		< RESISTOR >			
R1151	1-216-864-91	SHORT	0		
R1152	1-216-857-11	METAL CHIP	1M	5%	1/16W
R1153	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1154	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1155	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1156	1-216-857-11	METAL CHIP	1M	5%	1/16W
R1159	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1161	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1162	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1163	1-216-805-11	METAL CHIP	47	5%	1/16W
R1165	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1166	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1167	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1168	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1169	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1170	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R1171	1-216-809-11	METAL CHIP	100	5%	1/16W
R1172	1-216-809-11	METAL CHIP	100	5%	1/16W
R1173	1-216-809-11	METAL CHIP	100	5%	1/16W
R1174	1-216-864-91	SHORT	0		
R1176	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1177	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1178	1-211-977-11	METAL CHIP	22	0.5%	1/16W
R1179	1-211-977-11	METAL CHIP	22	0.5%	1/16W
R1180	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1181	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R1182	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1185	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1186	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1189	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1190	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1191	1-216-864-91	SHORT	0		
R1192	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1193	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1194	1-216-833-11	METAL CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R1198	1-216-809-11	METAL CHIP	100	5%	1/16W
R1203	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1205	1-216-809-11	METAL CHIP	100	5%	1/16W
R1207	1-216-853-11	METAL CHIP	470K	5%	1/16W
R1208	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1903	1-216-864-91	SHORT	0		
R1912	1-216-864-91	SHORT	0		
R1913	1-216-845-11	METAL CHIP	100K	5%	1/16W
R1914	1-216-864-91	SHORT	0		
R1916	1-216-841-11	METAL CHIP	47K	5%	1/16W
R1917	1-216-864-91	SHORT	0		
R1995	1-216-864-91	SHORT	0		
R1997	1-216-812-11	METAL CHIP	180	5%	1/16W
		< COMPOSITION CIRCUIT BLOCK >			
RB1151	1-234-378-21	RES, NETWORK 10KX4		(1005)	
RB1152	1-234-378-21	RES, NETWORK 10KX4		(1005)	
RB1154	1-234-381-21	RES, NETWORK 100KX4		(1005)	
RB1155	1-234-381-21	RES, NETWORK 100KX4		(1005)	
RB1156	1-234-381-21	RES, NETWORK 100KX4		(1005)	
		< VARISTOR >			
VDR111	1-801-862-11	VARISTOR, CHIP			
VDR112	1-801-862-11	VARISTOR, CHIP			
		< VIBRATOR >			
X1151	1-781-620-21	VIBRATOR, CERAMIC (48MHz)			
X1152	1-781-762-21	VIBRATOR, CRYSTAL (25.8048MHz)			
	A-7074-772-A	PD-143 (35SH123) BOARD, COMPLETE(TRV17)			
		**********			
	A-7074-863-A	PD-143 (25SH123) BOARD, COMPLETE(TRV15)			
		**********			
		(Ref.No.;10000Series)			
		< CAPACITOR >			
C5501	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C5503	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5504	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5505	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5506	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5507	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5508	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5509	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C5510	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5511	1-164-739-11	CERAMIC CHIP	560PF	5%	50V
C5512	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5513	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5514	1-127-688-21	TANTAL. CHIP	10uF	20%	6.3V
C5515	1-164-357-11	CERAMIC CHIP	0.001uF	5%	50V
C5516	1-162-925-11	CERAMIC CHIP	68PF	5%	50V (TRV15)
C5516	1-162-927-11	CERAMIC CHIP	100PF	5%	50V (TRV17)
C5517	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5518	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5519	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5520	1-113-994-11	TANTAL. CHIP	6.8uF	20%	16V

Ref. No.	Part No.	Description			Remarks
C5521	1-127-573-11	CERAMIC CHIP	1uF	10%	16V
C5524	1-127-573-11	CERAMIC CHIP	1uF	10%	16V
C5527	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5528	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C5530	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5531	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5602	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C5604	1-164-657-11	CERAMIC CHIP	0.015uF	10%	50V
C5605	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5606	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
⚠C5607	1-131-959-91	CERAMIC CHIP	12PF	10%	3KV
		< CONNECTOR >			
CN5501	1-691-362-11	CONNECTOR, FFC/FPC (ZIF) 24P			
* CN5502	1-573-984-11	CONNECTOR, BOARD TO BOARD 10P			
CN5604	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P			
CN5701	1-794-997-11	PIN, CONNECTOR 20P			
CN5703	1-766-336-21	CONNECTOR, FFC/FPC 6P			
		< DIODE >			
D5502	8-719-084-46	DIODE 1SV288(TPH3)			
D5503	8-719-073-01	DIODE MA111-(K8).S0			
D5601	8-719-073-01	DIODE MA111-(K8).S0			
		< FERRITE BEAD >			
FB5502	1-414-760-21	FERRITE	0uH		
FB5503	1-414-760-21	FERRITE	0uH		
FB5504	1-414-760-21	FERRITE	0uH		
		< IC >			
IC5501	8-759-660-92	IC RB5P003AM1			
IC5502	8-759-714-77	IC LZ9FF474			
IC5601	8-759-564-49	IC TC7W53FU(TE12R)			
IC5602	8-759-075-70	IC TA75S393F-TE85R			
		< COIL >			
L5501	1-469-525-91	INDUCTOR	10uH		
L5505	1-412-949-21	INDUCTOR	6.8uH		
L5601	1-419-387-21	INDUCTOR	100uH		
		< TRANSISTOR >			
Q5502	8-729-041-23	TRANSISTOR	MGSF1P02LT1		
Q5509	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO		
Q5510	8-729-054-48	TRANSISTOR	HN1B04FE-Y/GR(TPLR3)		
Q5511	8-729-054-48	TRANSISTOR	HN1B04FE-Y/GR(TPLR3)		
Q5601	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO		
Q5602	8-729-039-43	TRANSISTOR	FP216-TL		
Q5603	8-729-054-48	TRANSISTOR	RN4983FE(TPLR3)		
		< RESISTOR >			
R5501	1-216-853-11	METAL CHIP	470K	5%	1/16W
R5503	1-218-891-11	METAL CHIP	68K	0.5%	1/16W
R5505	1-216-835-11	METAL CHIP	15K	5%	1/16W
R5506	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R5507	1-216-841-11	METAL CHIP	47K	5%	1/16W

Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note :
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remarks
R5508	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5509	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5510	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5511	1-216-857-11	METAL CHIP	1M	5%	1/16W
R5512	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5513	1-216-857-11	METAL CHIP	1M	5%	1/16W
R5515	1-216-864-91	SHORT	0		
R5516	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5521	1-216-864-91	SHORT	0		
R5523	1-216-809-11	METAL CHIP	100	5%	1/16W
R5524	1-216-809-11	METAL CHIP	100	5%	1/16W
R5525	1-216-809-11	METAL CHIP	100	5%	1/16W
R5551	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5553	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TRV15)
R5553	1-216-830-11	METAL CHIP	5.6K	5%	1/16W (TRV17)
R5557	1-216-864-91	SHORT	0		
R5562	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5563	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5564	1-216-857-11	METAL CHIP	1M	5%	1/16W
R5565	1-216-857-11	METAL CHIP	1M	5%	1/16W
R5569	1-216-848-11	METAL CHIP	180K	5%	1/16W
R5570	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5571	1-216-857-11	METAL CHIP	1M	5%	1/16W
R5572	1-216-821-11	METAL CHIP	1K	5%	1/16W
R5573	1-216-864-91	SHORT	0		
R5574	1-216-864-91	SHORT	0		
R5575	1-216-864-91	SHORT	0		
R5576	1-216-821-11	METAL CHIP	1K	5%	1/16W
R5609	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5610	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R5611	1-216-848-11	METAL CHIP	180K	5%	1/16W
R5612	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5613	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R5614	1-216-833-11	METAL CHIP	10K	5%	1/16W (TRV15)
R5614	1-216-835-11	METAL CHIP	15K	5%	1/16W (TRV17)
R5616	1-216-809-11	METAL CHIP	100	5%	1/16W
R5617	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5618	1-216-817-11	METAL CHIP	470	5%	1/16W
		< TRANSFORMER >			
⚠T5601	1-435-785-21	TRANSFORMER, INVERTER			

Ref. No.	Part No.	Description	Remarks
	A-7096-601-A	VC-260 (FBFBIO) BOARD, COMPLETE (SERVICE)	(TRV17)
		**********	
	A-7096-703-A	VC-260 (FBIO) BOARD, COMPLETE (SERVICE)	(TRV15)
		**********	
		(Ref.No.;20000Series)	

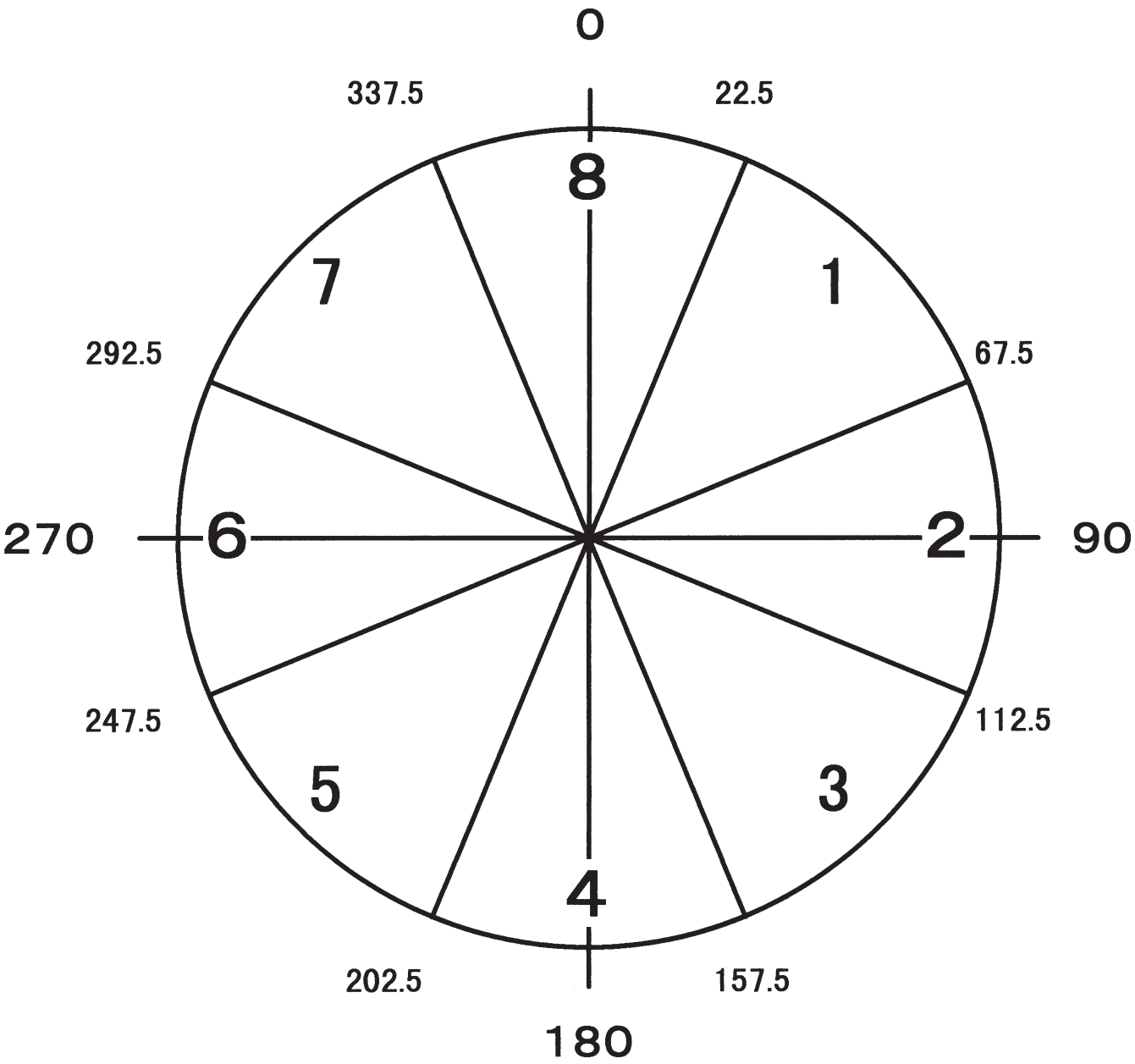
Electrical parts list of the VC-260 board are not shown.
Pages 6-17 to 6-26 are not shown.

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks
		ACCESSORIES	
		**********	
	1-475-141-61	REMOTE COMMANDER (RMT-814)	
⚠	1-475-599-11	ADAPTOR, AC (AC-L10A) (TRV15:E,HK,JE/TRV17:US,CND,HK,JE,E,BR,AR)	
⚠	1-475-599-71	ADAPTOR, AC (AC-L10A) (TRV15:KR/TRV17:KR)	
⚠	1-569-007-11	ADAPTOR, CONVERSION 2P (TRV15:JE/TRV17:JE)	
⚠	1-569-008-21	ADAPTOR, CONVERSION 2P (TRV15:E,HK/TRV17:E,HK)	
	1-757-293-21	CORD, CONNECTION (USB 5P)(TRV17)	
	1-765-080-11	CORD, CONNECTION (AV CABLE)(1.5m)	
⚠	1-769-608-11	CORD, POWER (TRV15:E/TRV17:E,BR)	
⚠	1-776-985-11	CORD, POWER (TRV15:KR/TRV17:KR)	
⚠	1-783-374-11	CORD, POWER (TRV15:HK/TRV17:HK)	
⚠	1-783-952-11	CORD, POWER (TRV17:AR)	
⚠	1-790-107-22	CORD, POWER (TRV17:US,CND)	
⚠	1-790-732-11	CORD, POWER (TRV15:JE/TRV17:JE)	
	3-066-676-01	SPVD-004 (P) (CD-ROM) (USB DRIVER) (TRV17:E,HK,JE,KR)	
	3-066-677-01	SPVD-004 (I) (CD-ROM) (USB DRIVER) (TRV17:US,CND,AR,BR)	
	3-067-425-11	MANUAL, INSTRUCTION (ENGLISH) (TRV15:E,HK,JE/TRV17:US,CND,E,HK,JE)	
	3-067-425-21	MANUAL, INSTRUCTION (FRENCH) (TRV17:CND)	
	3-067-425-31	MANUAL, INSTRUCTION (SPANISH/PORTUGUESE)(TRV15:E,JE/TRV17:E,JE,AR,BR)	
	3-067-425-41	MANUAL, INSTRUCTION (TRADITIONAL CHINESE) (TRV15:E,HK/TRV17:E,HK)	
	3-067-425-51	MANUAL, INSTRUCTION (KOREAN) (TRV15:JE,KR/TRV17:JE,KR)	
	3-067-425-61	MANUAL, INSTRUCTION (ARABIC) (TRV15:E/TRV17:E)	
	3-742-854-01	LID, BATTERY CASE (FOR RMT-814)	
	3-987-015-01	BELT (S), SHOULDER	
	A-7033-740-A	MEMORY STICK (MSA-4A) (TRV17)	
	X-3950-537-1	LENS CAP ASSY	

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note :** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

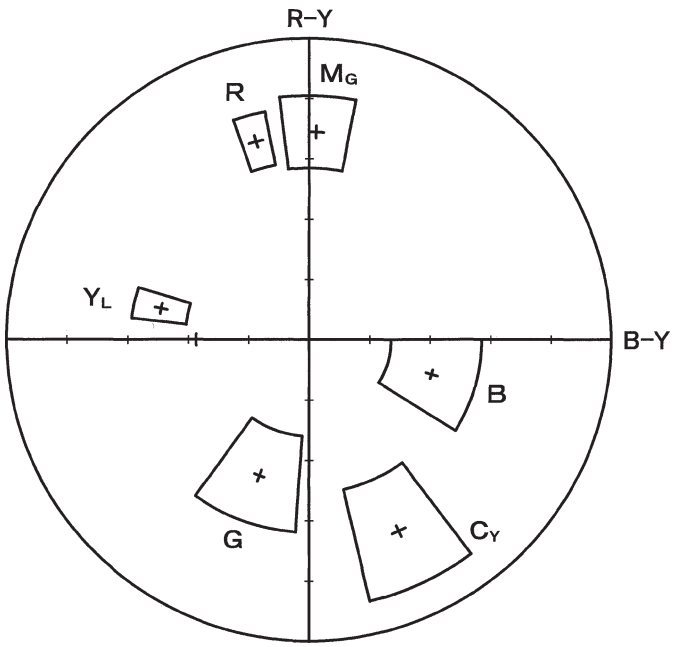
⟨OPTICAL AXIS FRAME⟩



Take a copy of OPTICAL AXIS FRAME with a clear sheet for use.

〈FOR CAMERA COLOR REPRODUCTION ADJUSTMENT〉

Take a copy of CAMERA COLOR REPRODUCTION FRAME with a clear sheet for use.



DCR-TRV15/TRV17

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DCR-TRV15/TRV17

RMT-814

SONY

SERVICE MANUAL

Level 2

2001. 07

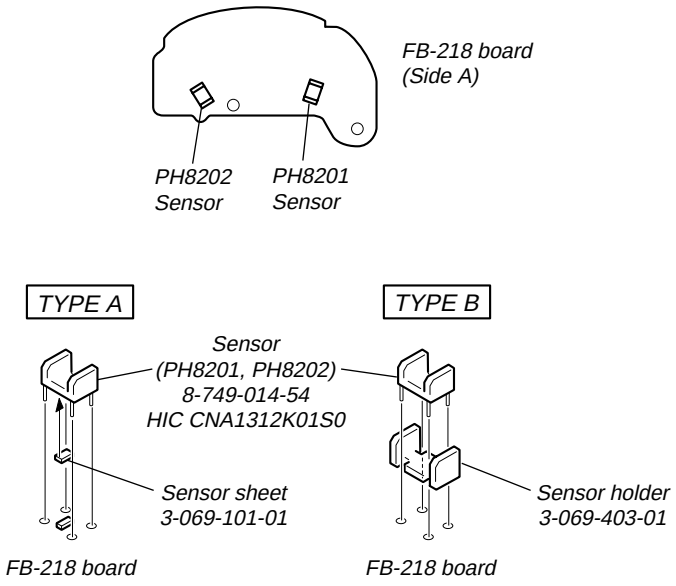
US Model
Canadian Model
Argentina Model
Brazilian Model
DCR-TRV17
E Model
Hong Kong Model
Korea Model
Tourist Model
DCR-TRV15/TRV17

SUPPLEMENT-1

File this supplement-1 with the Service Manual.
(EVB11265)

Subject: Sensor block is changed.

Attaching the sensor holder



SECTION 6. REPAIR PARTS LIST

6-2. ELECTRICAL PARTS LIST

: Corrected portion.

Page	INCORRECT				CORRECT			
	Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
			< PHOTO INTERRUPTER >				< PHOTO INTERRUPTER >	
6-11	PH8201	8-759-014-54	HIC CNA1312K01S0		PH8201	8-749-014-54	HIC CNA1312K01S0	
	PH8202	8-759-014-54	HIC CNA1312K01S0		PH8202	8-749-014-54	HIC CNA1312K01S0	

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US Model
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SUPPLEMENT-2

File this supplement-2 with the Service Manual.

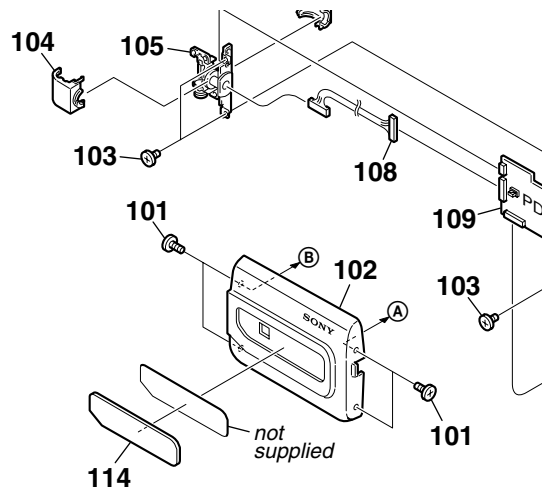
Subject: Addition of service part

SECTION 6. REPAIR PARTS LIST

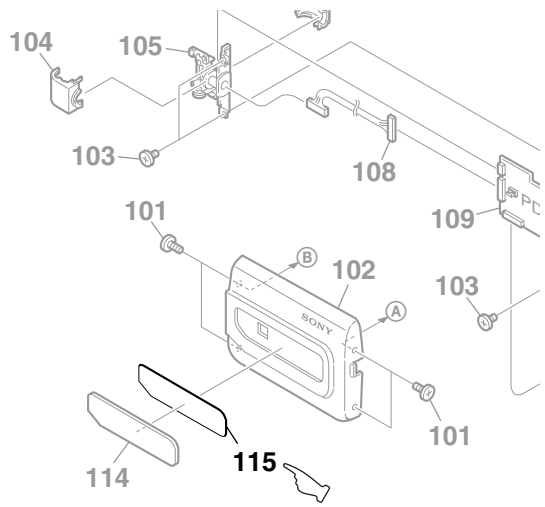
6-1. EXPLODED VIEWS

: Added portion.

Page	Before change	After change
6-3	**6-1-3. LCD SECTION**	**6-1-3. LCD SECTION**



Ref. No.	Part No.	Description	Remarks
114	3-066-736-21	PLATE, P ORNAMENTAL (TRV15)	
LCD901	1-803-853-21	INDICATOR MODULE LIQUID CRYST (2.5)	(TRV15)
LCD901	1-803-855-21	INDICATOR MODULE LIQUID CRYST (3.5)	(TRV17)



Ref. No.	Part No.	Description	Remarks
114	3-066-736-21	PLATE, P ORNAMENTAL (TRV15)	
115	3-066-844-03	SHEET (17), PLATE ADHESIVE	
LCD901	1-803-853-21	INDICATOR MODULE LIQUID CRYST (2.5)	(TRV15)
LCD901	1-803-855-21	INDICATOR MODULE LIQUID CRYST (3.5)	(TRV17)

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Hong Kong Model
Korea Model
Tourist Model
DCR-TRV15/TRV17

SUPPLEMENT-3

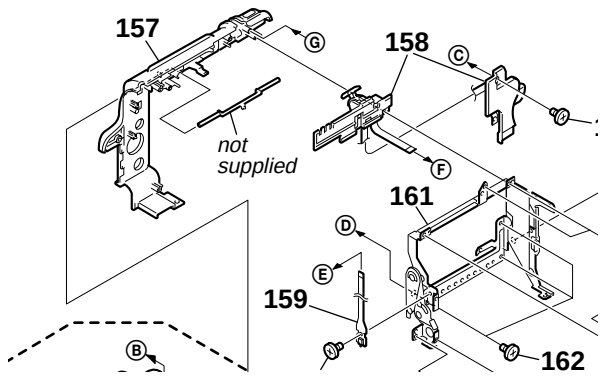
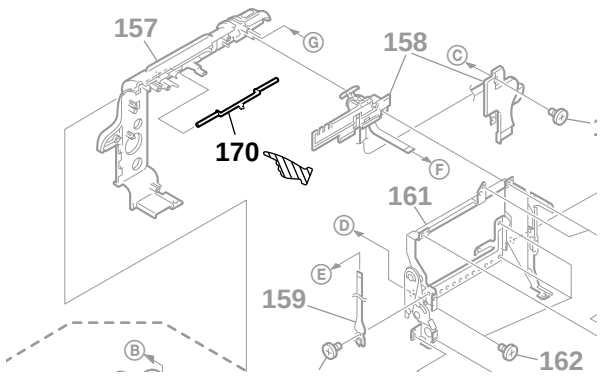
File this supplement-2 with the Service Manual.
(PV03-007)

Subject: Addition of service part

SECTION 6. REPAIR PARTS LIST

6-1. EXPLODED VIEWS

: Added portion. : Changed portion.

Page	Before change	After change
6-4	**6-1-4. CABINET (L) SECTION**  Ref. No. / Part No. / Description / Remarks 169 3-068-717-01 CUSHION LL BT901 1-694-772-11 TERMINAL BOARD, BATTERY	**6-1-4. CABINET (L) SECTION**  Ref. No. / Part No. / Description / Remarks 169 3-068-717-01 CUSHION LL 170 3-067-040-01 BLIND, SHAFT BT901 1-694-772-11 TERMINAL BOARD, BATTERY

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Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2001.03	Official Release	—	—
1.1	2001.07	Supplement-1/ Correction	Sensor block is changed. S.M. correction: Page 6-11	Yes
1.2	2002.09	Supplement-2	Addition of service part	No
1.3	2003.05	Correction-1	Correction of printed wiring board S.M. correction: Page 4-75	Yes
1.4	2003.07	Supplement-3	Addition of service part	No
1.5	2003.11	Correction-2	Correction of SELF-DIAGNOSIS CODE TABLE. S.M. correction: Page 9	Yes

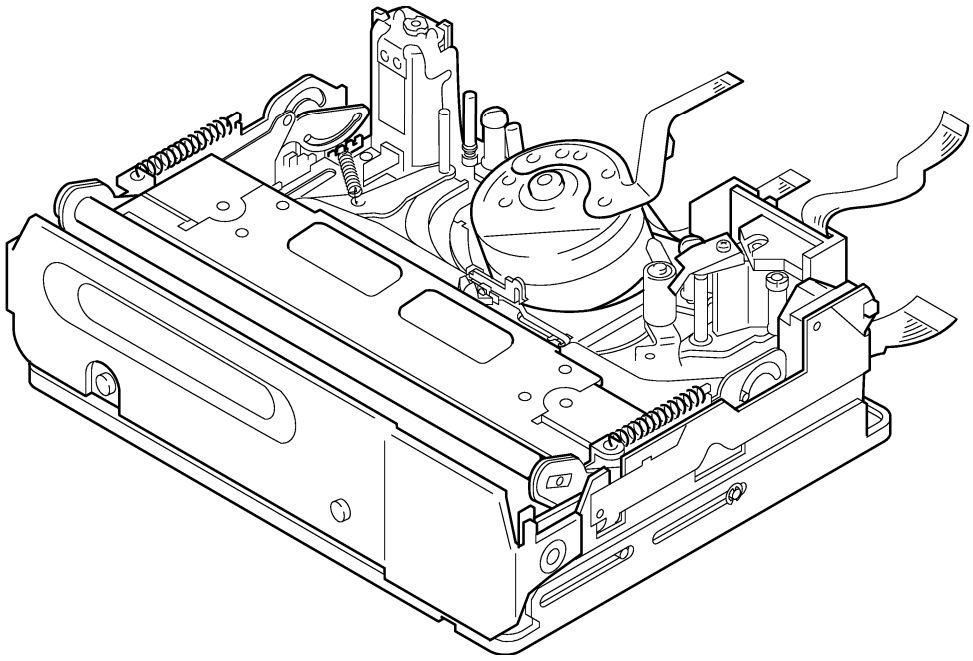
DV MECHANICAL ADJUSTMENT MANUAL VI

Ver 1.0 2000. 3

J MECHANISM

Mini DV Digital Video Cassette

Please use this manual with the service manual of the respective models.



Digital MECHANISM DECK

SONY

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1. Preparations for Check, Adjustment and Replacement of Mechanism Block

- Refer to the "DISASSEMBLY" section of the SERVICE MANUAL of the respective models for details of removing cabinets and printed wiring boards.
- When making any adjustment to a mechanism or replacing mechanical parts, be sure to use the Mode Selector II and select the appropriate status of the mechanical deck such that the mechanical status is suitable for the desired work. Refer to section "2-5. Mode Selector II" for details on how to enter the mode shown in a rectangle ▭ mode in subsequent paragraphs of this manual.

1-1. Cassette Compartment Assy, Damper Assy

1. Removal Procedure

1) Set the [EJ] mode.
2) When the cassette compartment moves up in the direction of the arrow Ⓑ, establish the [ULE] mode.
3 Release the two claws ① and dowel of the damper assy and remove the damper assy.
4) Remove the shaft of the holder arm from the damper arm.
5) Remove the two screws (M1.4 × 2) ②.
6) Lift up the LS frame in the direction of the arrow Ⓒ.
7) Lift up the cassette compartment block assy in the direction of the arrow Ⓐ. While pushing the holder arm in the direction of the inside arrow Ⓔ, remove the cassette compartment block assy.

2. Attachment procedure

1) Set the [ULE] mode.
2) Attach the holder arm of the cassette compartment block assy to the cassette compartment slide shaft on both sides of the LS chassis block assy from inside.
3) Install the LS frame pivot into the groove Ⓓ of the LS chassis. Drop down the LS frame in the direction opposite to Ⓒ.
4) Hook the LS frame T-side bent portion on the LS chassis notch Ⓕ.
5) Attach the LS frame with two screws (M1.4 × 2) ②. Tightening torque: 0.054 ± 0.01 N•m (0.6 kg•cm).
6) While inserting the damper shaft of the cassette compartment block assy into slot of the damper arm, engage the two claws ① with the notch of the LS chassis block assy, and fix the dowel to the corresponding hole of the LS chassis block assy respectively.

Note: Check that the two claws ① and dowel do not come off.

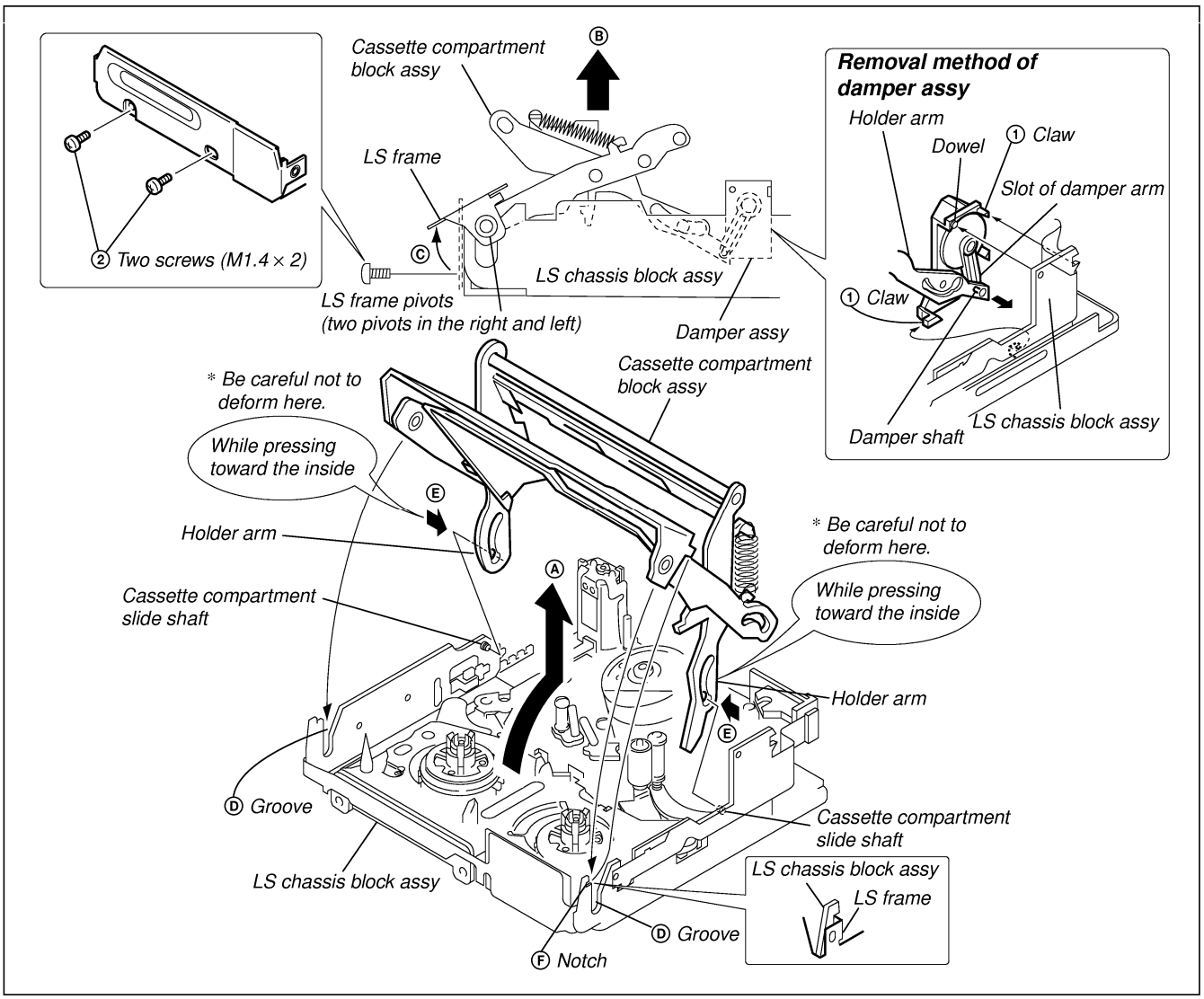


Fig. 1-1

2. Periodic Inspection and Maintenance

- Be sure to perform the following maintenance and inspection so that the machine delivers its full performance and functions, and to protect the machine and tape. Also, perform the following maintenance items after completing the repair work, regardless of the number of hours the machine has been operated by the user.

2-1. Rotary Drum Cleaning

1) Press a wiping cloth (Ref. No. J-2) moistened with cleaning fluid (Ref. No. J-1) lightly against the rotary drum. Rotate the upper drum with a super-fine applicator slowly in the counter-clockwise direction to clean the rotary drum.

Caution: Never rotate the rotary drum by turning on the main power of the motor or rotate it in the clockwise direction. Never move the cloth vertically against the head tip, as this will surely damage the video head; the video head must not be cleaned by any other different methods.

2-2. Tape Path System Cleaning (Refer to Fig. 2-1.)

1) Set the EJECT state. Clean the tape running path (TG-1, -2, -3, -4, -5, -6 and -7, pinch roller and capstan shaft) and lower drum with a super-fine applicator (Ref. J-3) moistened with cleaning fluid.

Note 1: Be careful not to allow oil or grease of the various link mechanisms to get on the super-fine applicator (Ref. J-3).
Note 2: Once the super-fine applicator has been moistened with alcohol, do not use it to clean other mechanical parts such as the tape guide. However, the pinch roller is cleaned with alcohol.
Note 3: When cleaning the capstan shaft, be carefull not to move the oil seal. If the oil seal is moved, oil will leak.

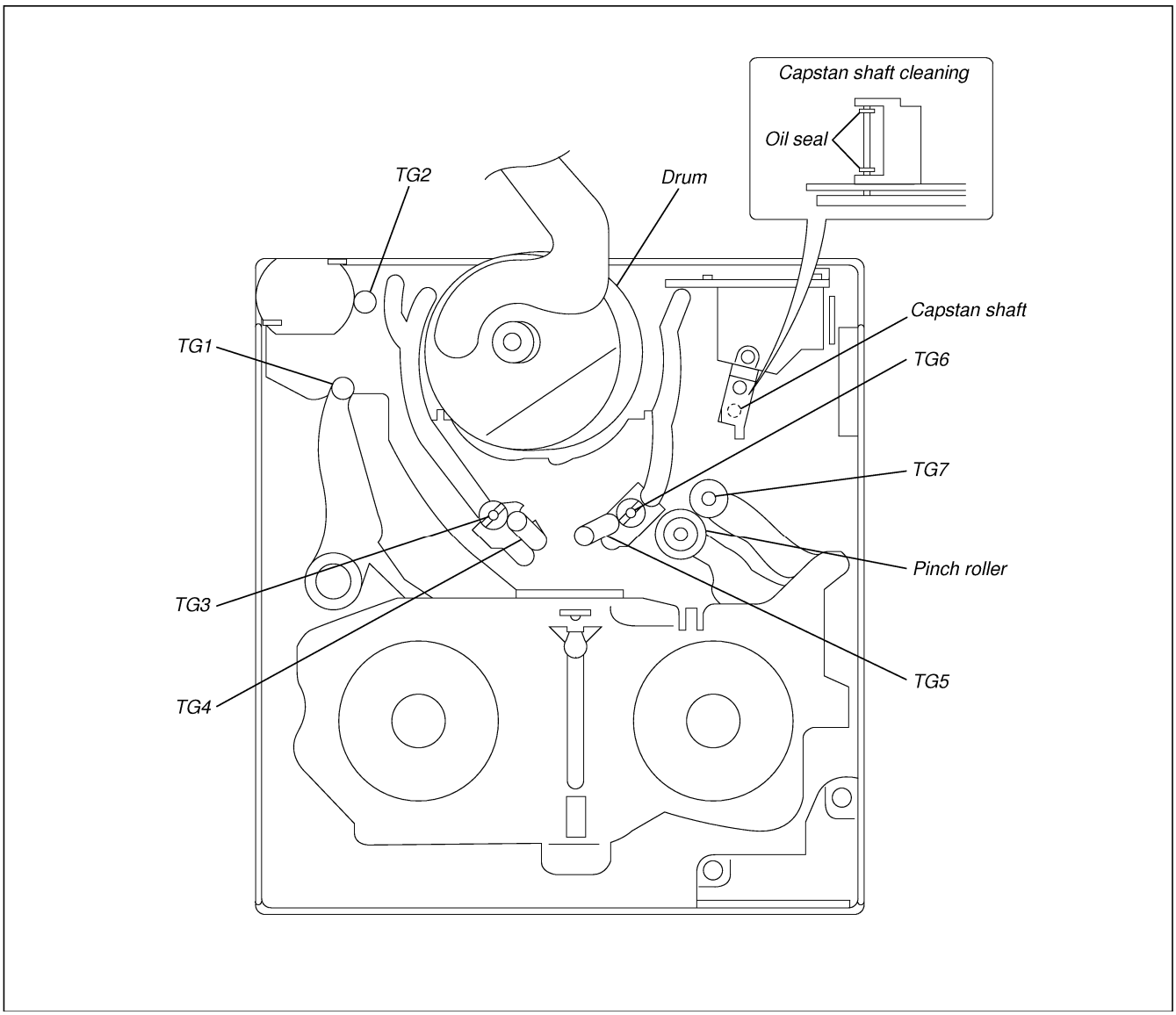


Fig. 2-1

2-3. Periodic Inspection List

Maintenance and inspection item		Operating hours (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
	Tape running surface cleaning	○	○	○	○	○	○	○	○	○	○	Be careful not to attach oil
	Rotary drum cleaning and degaussing	○	○	○	○	○	○	○	○	○	○	Be careful not to attach oil
Drive mechanism	Capstan bearing	—	☆	—	☆	—	☆	—	☆	—	☆	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance check	Abnormal sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back-tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD/RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○: Cleaning, ☆: Check

Note 1: When the machine is overhauled, replace the parts referring to the above list.

Note 2: Grease

- Be sure to use the specified grease only. (If grease of different viscosity is used, it can cause various troubles.)
- The grease used for bearings must not contain any dust or other matter, otherwise excessive abrasion and seizure of the bearing could occur.
- A drop of grease means the amount of grease as shown in the illustration, which is the amount that is attracted to the tip of a rod of 2 mm diameter.
- FLOIL grease (SG-941): Part No. 7-662-001-39

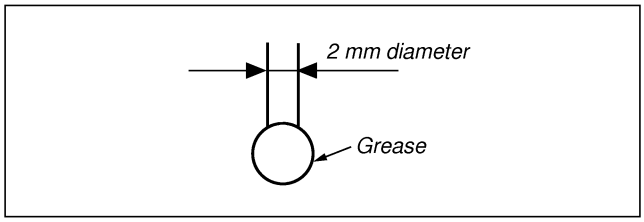


Fig. 2-2

2-4. Service Jigs and Tools

Ref. No.	Name	Part code	Jig inscription	Used for
J-1	Cleaning fluid	Y-2031-001-0		
J-2	Wiping cloth	7-741-900-53		
J-3	Super-fine applicator (made by Nippon Applicator (P752D))	—		
J-4	Mirror (small oval type)	J-6080-840-A	GD-2038	Tape path
J-5	Tracking tape (XH2-1) (NTSC, PAL)	8-967-997-01		Tape path
J-6	Mini DV torque cassette	J-6082-360-A		
J-7	TG1 adjustment jig (FWD position adjustment)	J-6082-492-A		
J-8	TG1 FWD adjustment screwdriver	J-6082-364-A		For TG1 FWD position adjustment
J-9	Dummy drum (for TG36) (J mechanism)	J-6082-490-A		
J-10	TG36 gauge	J-6082-491-A		
J-11	Torque screwdriver	J-9049-330-A		
J-12	Tape path screwdriver	J-6082-026-A		For tape path adjustment
J-13	Adjustment remote commander (RM-95 upgraded) * Note 1	J-6082-053-B		
J-14	Mode Selector II	J-6082-282-B		General adjustment (ROM version 1.7)
J-15	Mode Selector II conversion board (J)	J-6082-493-A		
J-16	Mode Selector II ROM (supporting J mechanism) * Note 2	J-6082-314-E		ROM for Mode Selector II

Other required equipment: Oscilloscope

Note 1: If the microprocessor in the adjustment remote commander is not the new one (UPD7503G-C56-12), the pages cannot be switched. In this case, replace it with the new microprocessor (8-759-148-35).

Note 2: This is the ROM used for upgrading the version of Mode Selector II to enable it to be used for the J mechanism.

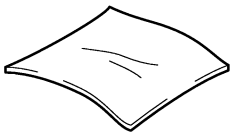
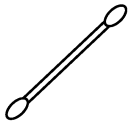
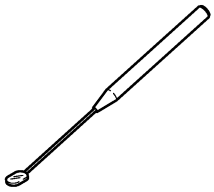
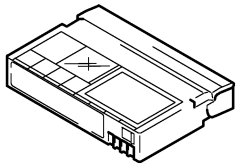
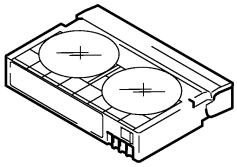
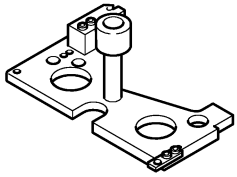
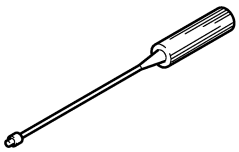
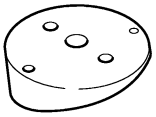
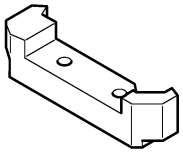
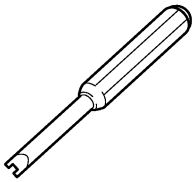
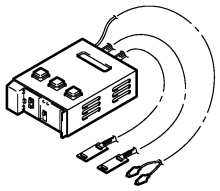
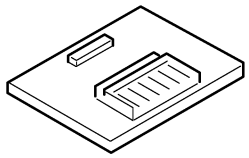
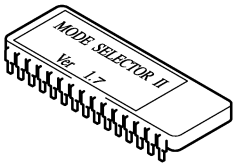
J-1	J-2 	J-3 	J-4 	J-5 
J-6 	J-7 	J-8 	J-9 	J-10 
J-11	J-12 	J-13	J-14 	J-15 
J-16 				

Fig. 2-3

2-5. Mode Selector II Operating Procedure

2-5-1. Introduction

The Mode Selector II is a mechanism drive tool that assists maintenance work of the various mechanism decks. It has the following functions.

1. Manual Test

In this mode, the motor of the mechanism deck is powered only during the period while the switch is turned on manually. Using the Manual Test, the operator can freely control the motor of the mechanism deck.

2. Step Test

In this mode, the motor of the mechanism deck is kept turned on until the mechanical status is changed from the present mechanical status that is obtained from the sensor information. The Step Test is used to confirm a series of movements of the mechanism deck.

3. Auto Test

The Mode Selector II stores the status transition table in its memory as data indicating the respective modes of the mechanism deck. The status transition table can be used to confirm whether a mechanism deck is operating normally or has abnormality from a series of movements of a mechanism deck. If an abnormal status transition is detected during operation, the "NG" indication appears and the mechanism stops moving.

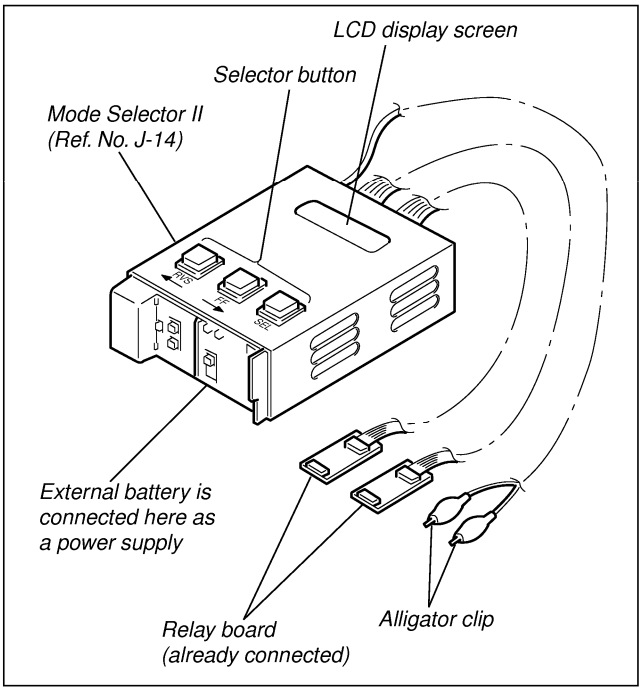


Fig. 2-4

Mode Selector II (J-6082-282-B) connection diagram

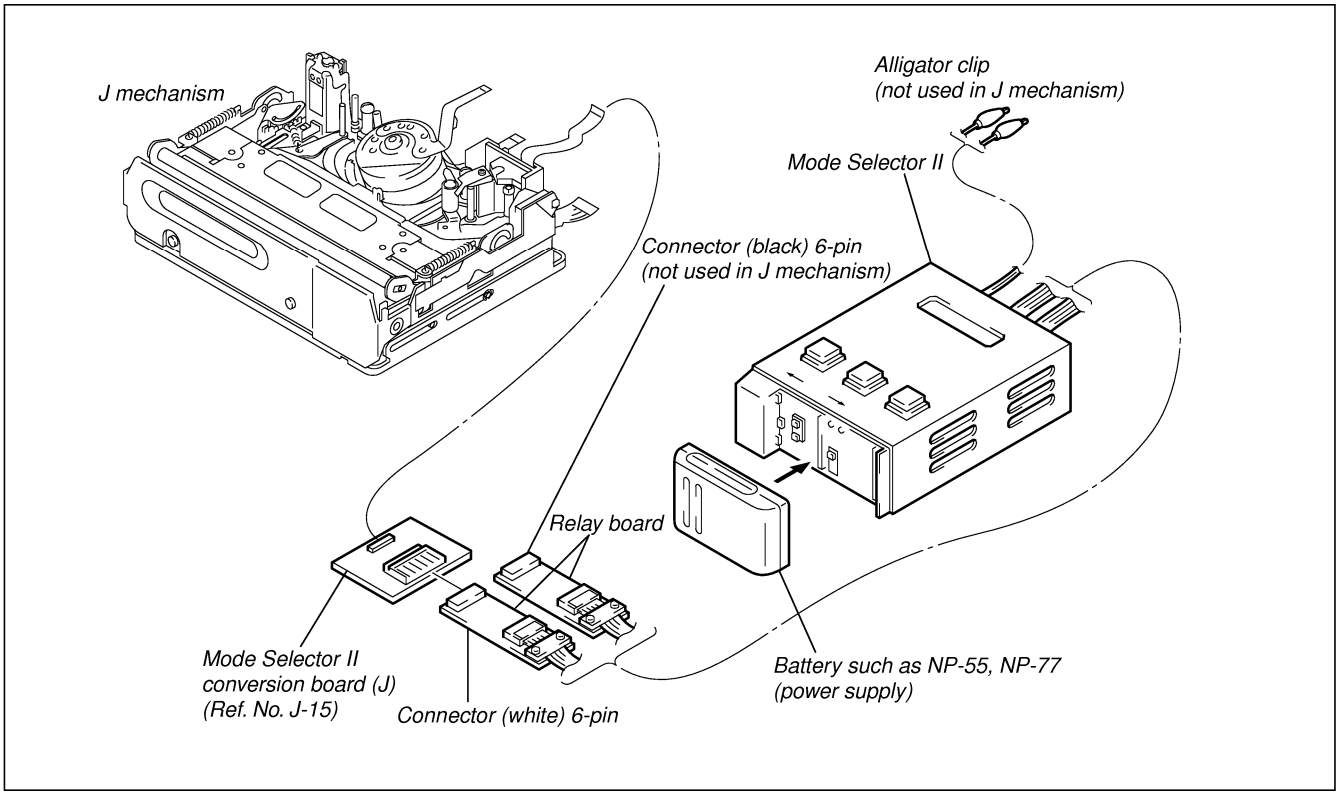
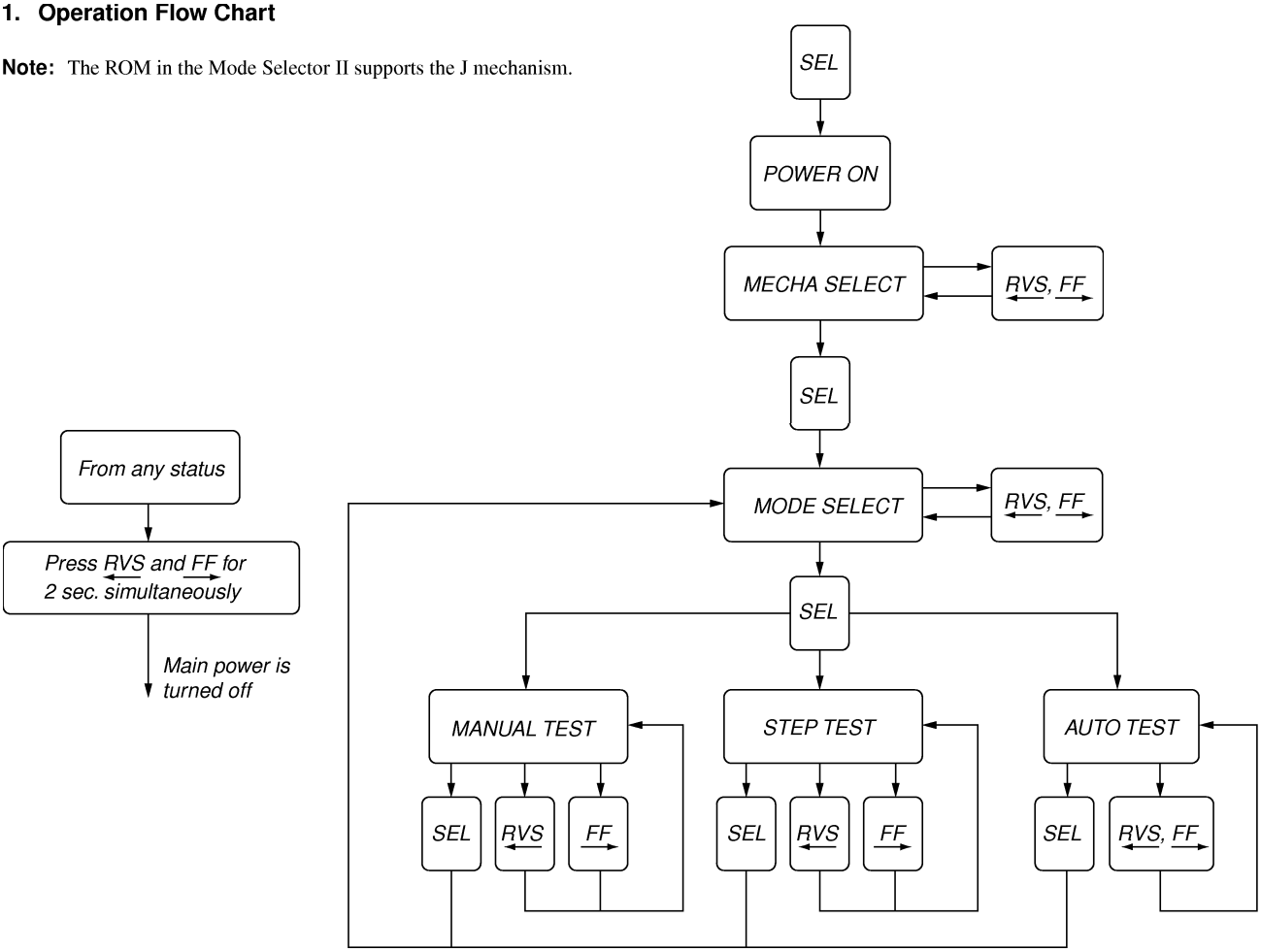


Fig. 2-5

2-5-2. Operation

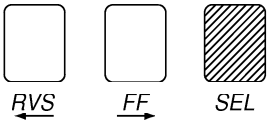
1. Operation Flow Chart

Note: The ROM in the Mode Selector II supports the J mechanism.



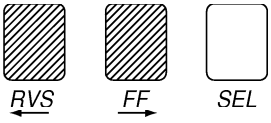
2. Mode Selector II Power On

Turn on the main power of the Mode Selector II as follows.
Press the SEL button.



3. Mode Selector II Power Off

Turn off the main power of the Mode Selector II as follows.
Press the RVS and FF buttons at the same time for 2 seconds or longer while the power is on.



4. Mecha Select

When the main power is turned on, the MECHA SELECT display appears on the LCD screen. Select the desired mechanism name using the RVS and FF buttons. Selection is complete when the SEL button is pressed. (Fig. A shows the J mechanism.)

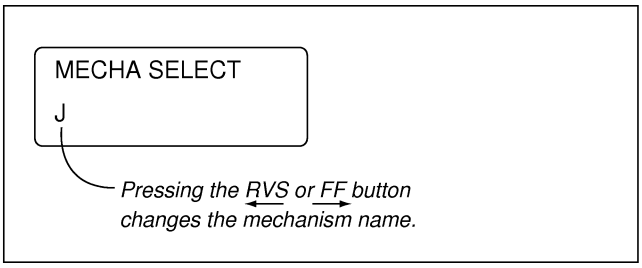


Fig. a

5. Test Type Select

Using the RVS and FF buttons, select a desired test type from the three types of "MANUAL", "STEP" and "AUTO". Selection is complete when the SEL button is pressed.

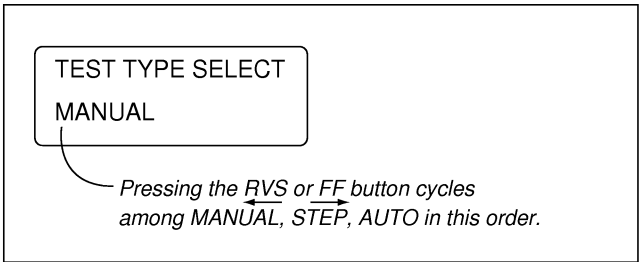


Fig. b

6. Manual Test

In this test, the motor of the mechanism deck is turned on only during the period while the RVS or FF button is pressed manually.

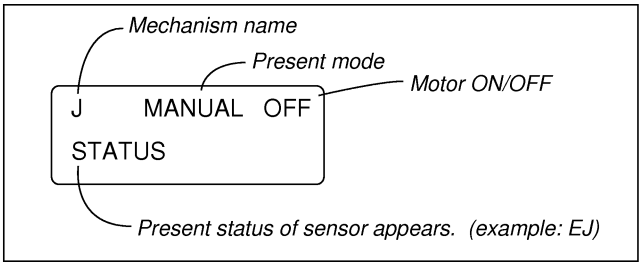


Fig. c

7. Step Test

In this test, the direction of motor movement is determined by the RVS and FF buttons. The motor of the mechanism deck is kept turned on until the mechanical status is changed from the present mechanical status that is obtained from the sensor information.

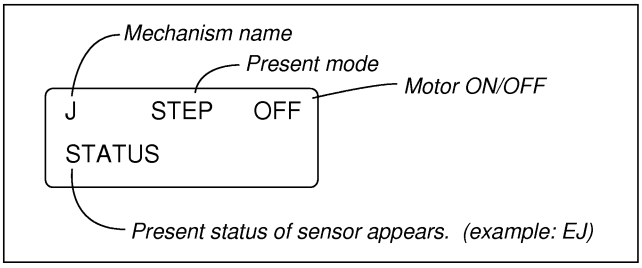


Fig. d

8. Auto Test

In this test, the mechanism deck is tested as to whether it performs a series of movements correctly in accordance with the operation sequence that is memorized earlier for each type of deck, by checking the output signals from sensors with the stored memory. Turning on the RVS or FF button performs the same operation.

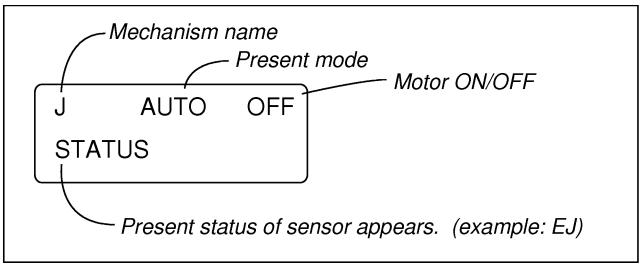


Fig. e

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2-5-3. Mechanism Status (Position) Transition Table Using Mode Selector II

After selecting a mechanism deck, select either the MANUAL or STEP test (not AUTO) using the Mode Selector II. The desired mechanism status (position) can be specified by pressing the RVS or FF button. (The selected status appears on STATUS.)
EJ⟷ULE⟷SR⟷GL⟷STOP⟷RP

MD name / Code				J Mechanism
A	B	C		
0	0	1	1	EJ
1	0	1	2	ULE
1	0	0	3	SR
1	1	0	4	GL
0	1	0	5	STOP
0	1	1	6	RP

2-5-4. Battery Alarm Indication

When the level of the battery used to supply power to this system decreases, this display appears asynchronously. When this happens, all operations are disabled and the battery must be replaced.

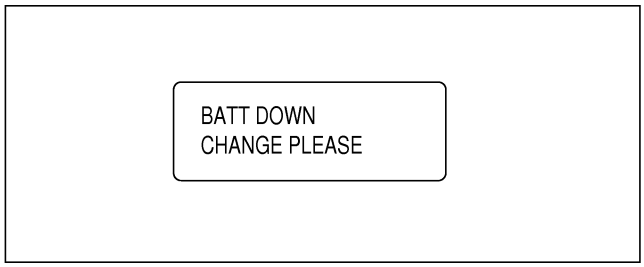

Fig. f

3. Check, Adjustment and Replacement of Mechanical Parts

3-1. Drum

1. Removal procedure

1) Loosen the three screws (M1.4 × 2) ① fixing the drum and remove the drum.

2. Attachment procedure

1) Align the two reference holes A and B on the rear of the drum with the position setting reference pins A and B of the drum base assy.
2) Install the drum with the three screws (M1.4 × 2) ① and tighten the screws in order from Ⓐ, then Ⓑ and finally Ⓒ.
   Tightening torque: 0.059 ± 0.01 N•m (0.6 kg•cm)
3) Clean the drum referring to section 2-1.
4) Perform the tape path adjustment. (Refer to section 4, "Tape Path Adjustment".)

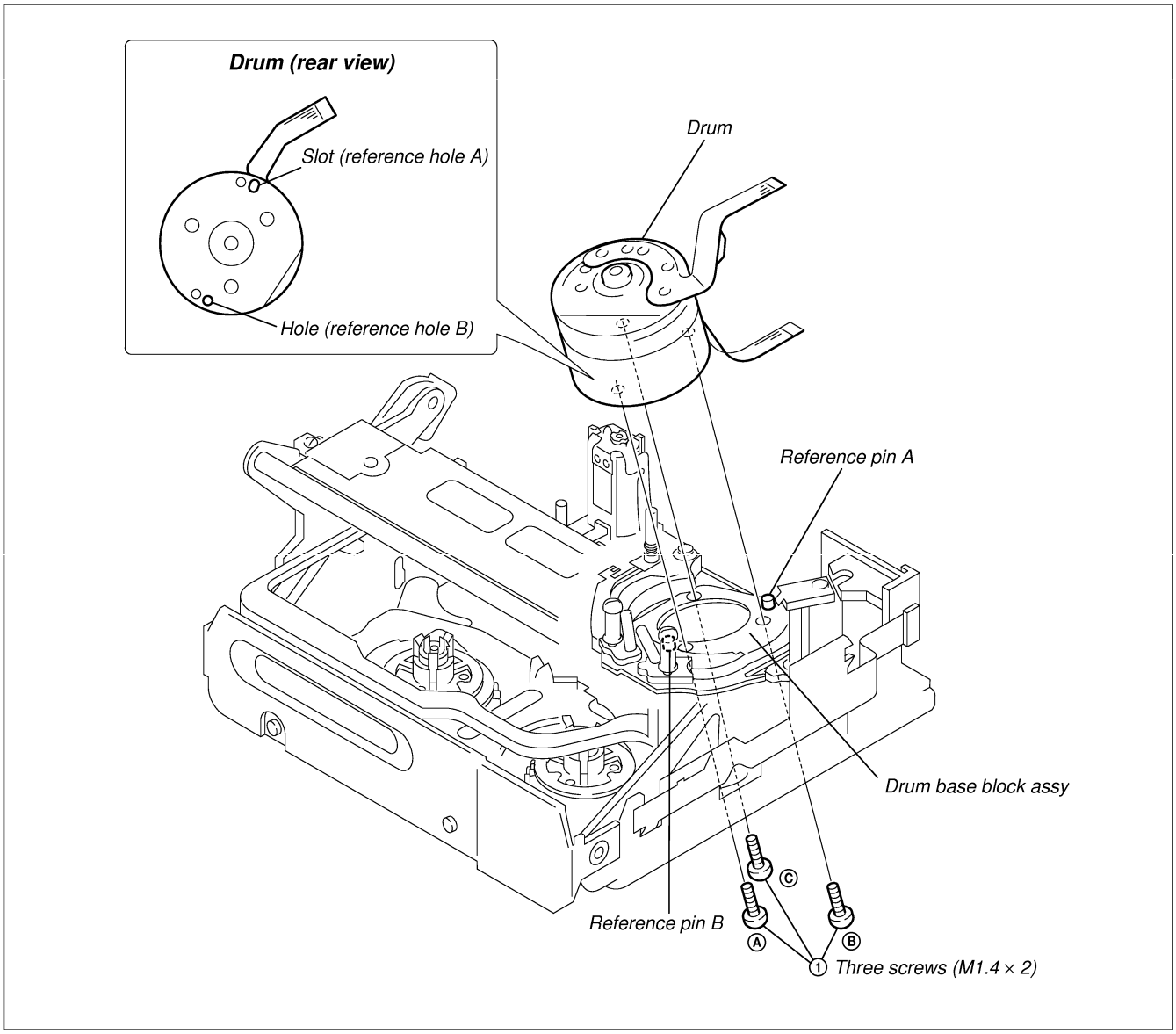

Fig.3-1

3-2. L. Motor Holder Block Assy (Loading) and FP-228 Flexible Wiring Board (DEW Sensor)

1. Removal procedure

1) Remove soldering ② from the L motor holder block assy (loading). Remove the FP-100 flexible wiring board.
2) Remove soldering ③ from the flexible wiring board FP-100. Remove the FP-228 flexible wiring board (DEW sensor).

Note: Since the FP-228 flexible wiring board (DEW sensor) is attached to the motor shield by adhesive agent, be careful not to break the flexible board when removing soldering.

3) Remove the screw (M1.4 × 2.5) ①.
4) Remove the L motor holder block assy.
5) Unlock the claw Ⓔ and remove the worm shaft.
6) Remove the motor shield.
7) Unlock the two claws Ⓐ of the motor holder. Remove the L motor block assy (loading) in the direction of Ⓑ.

Note: Be careful not to touch the DEW sensor.

2. Attachment procedure

1) Check the direction of the polarity marking Ⓒ of the L motor block assy (loading). Attach the L motor block assy (loading) to the motor holder so that the L motor block assy (loading) faces the worm shaft side.
2) While aligning the slot and dowel with the motor shield, attach the motor holder to the motor holder.
3) Apply grease (1/2 drop) between the worm shaft gear and gear tooth.
4) While the worm gear is engaged with the worm shaft gear, insert the worm shaft tip into the groove Ⓑ and fix the worm shaft under the claw Ⓔ.
5) While aligning the chassis's two square holes with the two round holes, attach the motor holder block assy with the screw (M1.4 × 2.5) ①.
   Tightening torque: 0.059 ± 0.01 N•m (0.6 kg•cm)
6) Connect FP-228 (DEW sensor) to the FP-100 flexible wiring board by soldering. Attach the DEW sensor to the motor shield.
7) Connect the FP-100 flexible wiring board to the motor holder block assy (loading) by soldering.

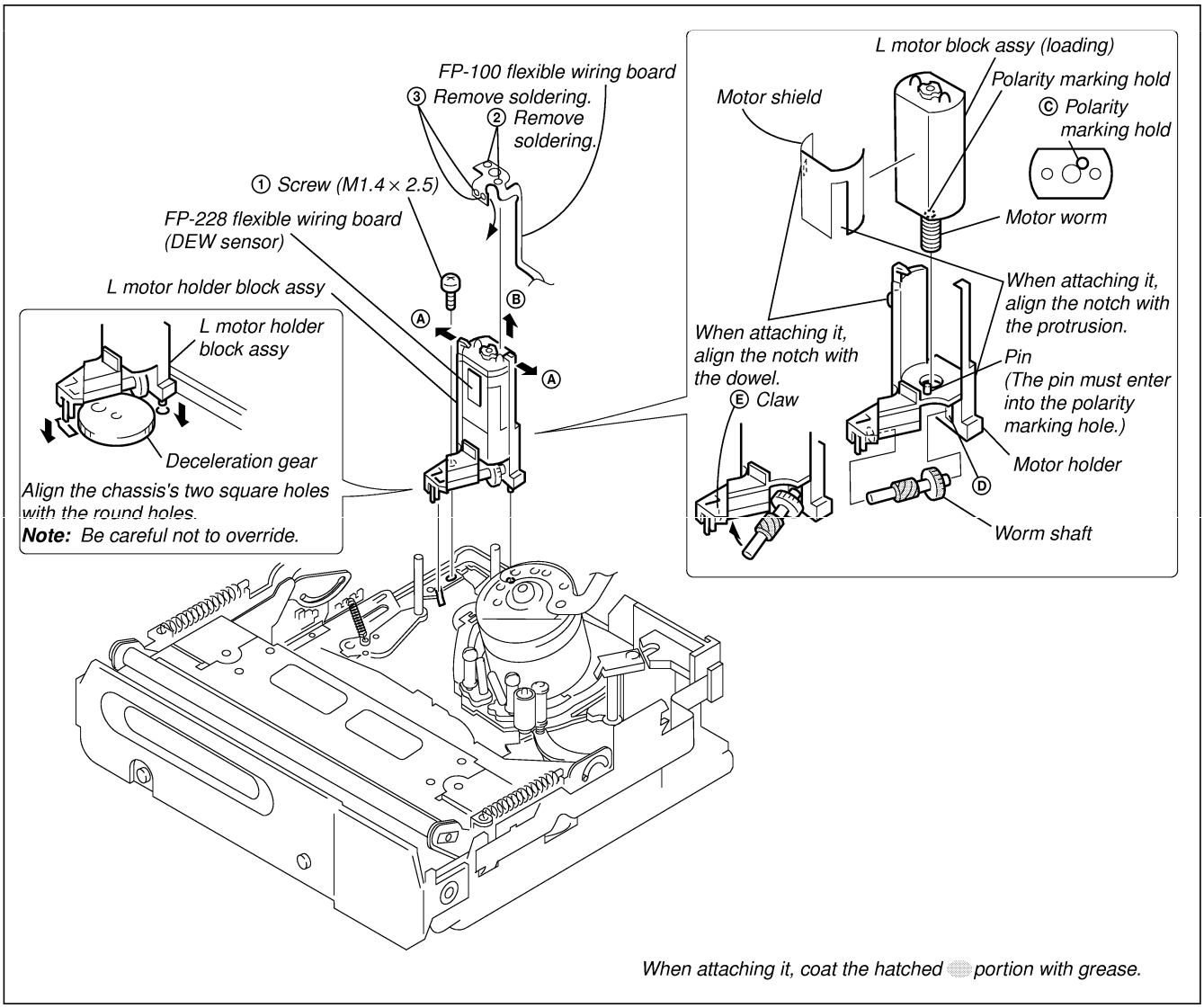
FP-100 flexible wiring board
③ Remove soldering.
② Remove soldering.
① Screw (M1.4 × 2.5)
FP-228 flexible wiring board (DEW sensor)
L motor holder block assy
L motor holder block assy
Deceleration gear
Align the chassis's two square holes with the round holes.
Note: Be careful not to override.
L motor block assy (loading)
Motor shield
Polarity marking hold
Ⓒ Polarity marking hold
Motor worm
When attaching it, align the notch with the protrusion.
When attaching it, align the notch with the dowel.
Ⓔ Claw
Pin
(The pin must enter into the polarity marking hole.)
Motor holder
Worm shaft
When attaching it, coat the hatched portion with grease.

Fig. 3-2

3-3. Retainer Plate Assy, LED Retainer

1. Removal procedure

1) While pressing the claw of the LED retainer in the direction of the arrow Ⓐ, remove the LED retainer.
2) Remove the LED portion ② of the FP-102 flexible wiring board.
3) Remove the two screws (M1.4 × 1.4) ①.
4) In order to remove the retainer plate assy, because it is hooked with shaft A, shaft B and shaft C, remove the retainer plate assy while moving it in the direction of the arrow Ⓑ.

2. Attachment procedure

1) Hook shaft A, shaft B and shaft C on notch A, notch B and notch C of the retainer plate assy in this order.
2) Attach the retainer plate assy with two screws (M1.4 × 1.4) ①. Tightening torque: 0.059 ± 0.01 N•m (0.6 kg•cm)
3) Route the FP-102 flexible wiring board as shown and install the LED into the prism as shown.
4) Hook the LED retainer on Ⓓ, attach it to Ⓔ and fix them.

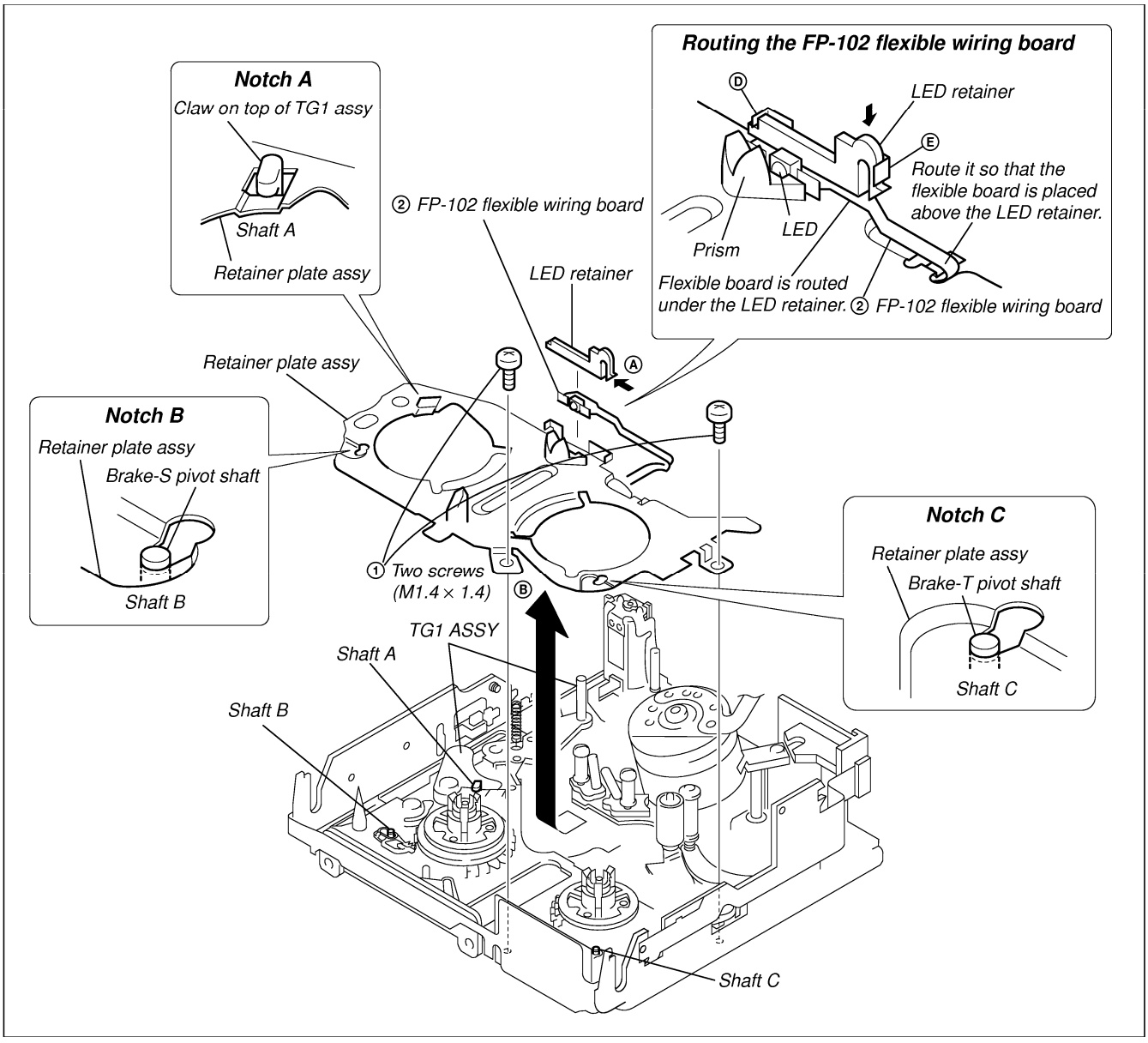

Fig. 3-3

3-4. Brake-T Block Assy, T-reel Table Assy, Gooseneck Gear Assy

1. Removal procedure

1) Remove the brake-T block assy from the brake-T pivot shaft.
2) While pressing the reel claw retainer Ⓐ of the T-reel table assy down in the direction of Ⓑ, remove the reel claw Ⓒ.
3) Remove the gooseneck assy from the relay gear shaft.

Note: Be careful not to break the reel claw.

2. Attachment procedure

1) Insert the gooseneck gear assy into the center hole of the relay gear shaft. Bend the gooseneck gear assy to the S-reel table assy side.
2) Attach the brake-T block assy to the brake-T pivot shaft Ⓓ.
3) Move the brake-T counter-clockwise so that T-brake is freed. While pressing down the reel claw of the T-reel assy, fix the T-reel to the reel shaft-T by rotating the reel.
4) Check that the brake spring-T works correctly by rotating the T-reel table assy 30 degrees in the clockwise and counter-clockwise directions.

Note: The retainer on top of the brake spring-T must be hooked on the brake-T pivot shaft Ⓓ and moved down to the groove.

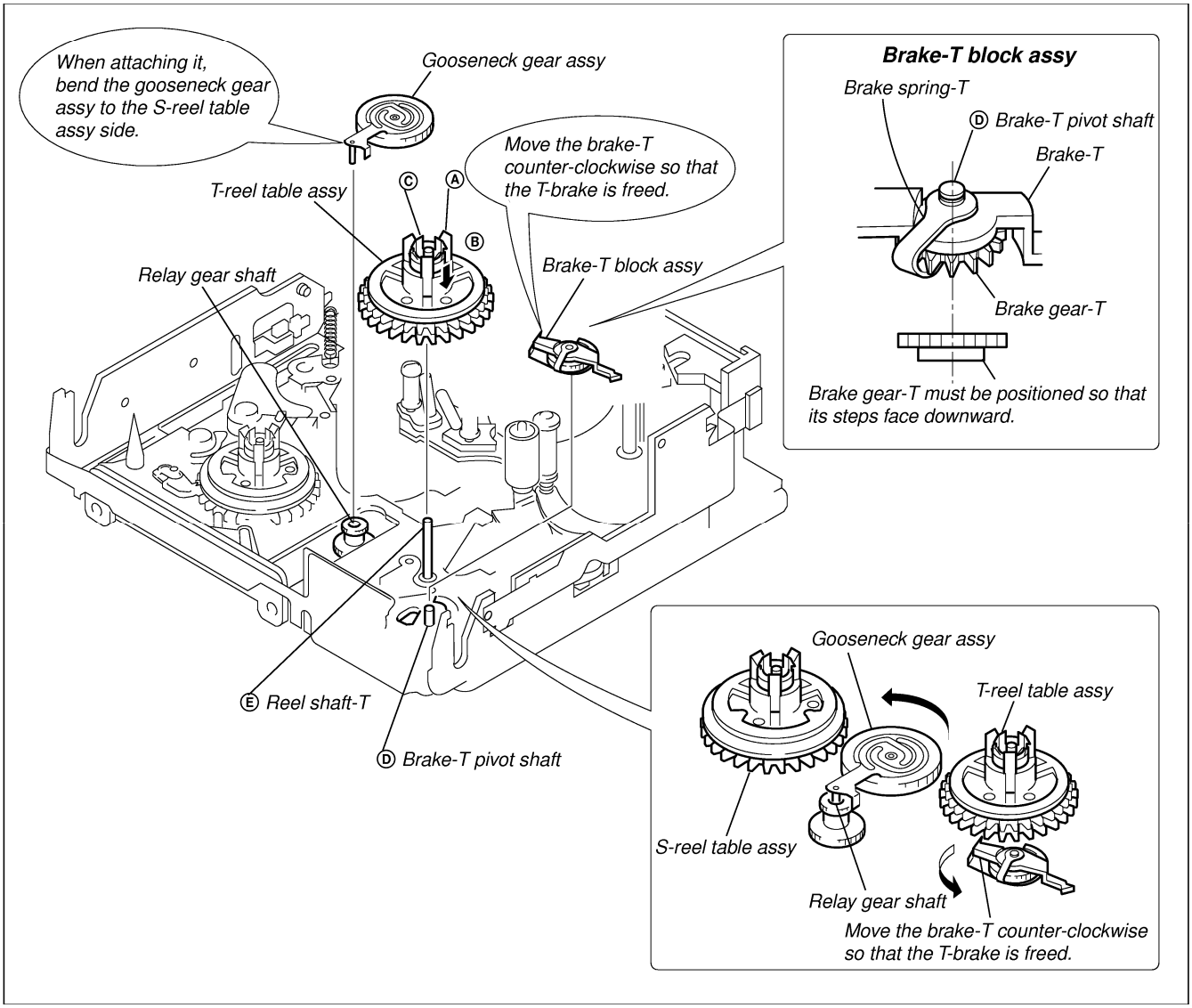
When attaching it, bend the gooseneck gear assy to the S-reel table assy side.
Gooseneck gear assy
Move the brake-T counter-clockwise so that the T-brake is freed.
T-reel table assy
Relay gear shaft
Brake-T block assy
Ⓒ
Ⓐ
Ⓑ
Ⓔ Reel shaft-T
Ⓓ Brake-T pivot shaft
Brake-T block assy
Brake spring-T
Ⓓ Brake-T pivot shaft
Brake-T
Brake gear-T
Brake gear-T must be positioned so that its steps face downward.
Gooseneck gear assy
T-reel table assy
S-reel table assy
Relay gear shaft
Move the brake-T counter-clockwise so that the T-brake is freed.

Fig. 3-4

3-5. TG1 Assy, Tension Coil Spring (Tension Regulator)

1. Removal procedure

1) Remove the screw (M1.4 × 2.5) ①.
2) Remove the tension coil spring.
3) Remove the TG1 assy tension regulator band.
4) Remove the (FWD) adjustment plate from the S-reel table. Place it between the T-reel table assy and pinch arm assy.
5) While pressing down the reel claw retainer Ⓐ of the S-reel table assy in the direction of Ⓑ, remove the reel claw Ⓒ.

Note 1: Be careful not to deform the tension regulator band.
Note 2: Be careful that grease does not attach to the tension regulator band.

2. Attachment procedure

1) Coat the root and its surroundings on TG1 pivot shaft Ⓐ with grease (1/4 drop). (Strictly observe the coating position and specified amount of grease.)
2) Attach the S-reel table assy to the reel shaft-S.
3) Attach the TG1 assy to the TG1 pivot shaft Ⓐ. Note that the TG1 drive shaft has entered the groove of the LS block assy at this moment.
4) Wrap the tension regulator band around the S-reel table assy. Fix it with the screw (M1.4 × 2.5) ① while ensuring that direction of the (FWD) adjustment plate is correct as shown.
5) Hook the tension coil spring ② on the TG1 assy and on the LS chassis block assy.
6) Clean the tip of the TG1 pivot shaft with a super-fine applicator (Ref. J-3) moistened with cleaning fluid.
7) Perform the (FWD) position adjustment referring to section 3-6.
8) Perform the FWD back-tension adjustment referring to section 3-7.
9) Perform the reel torque check referring to section 3-8.

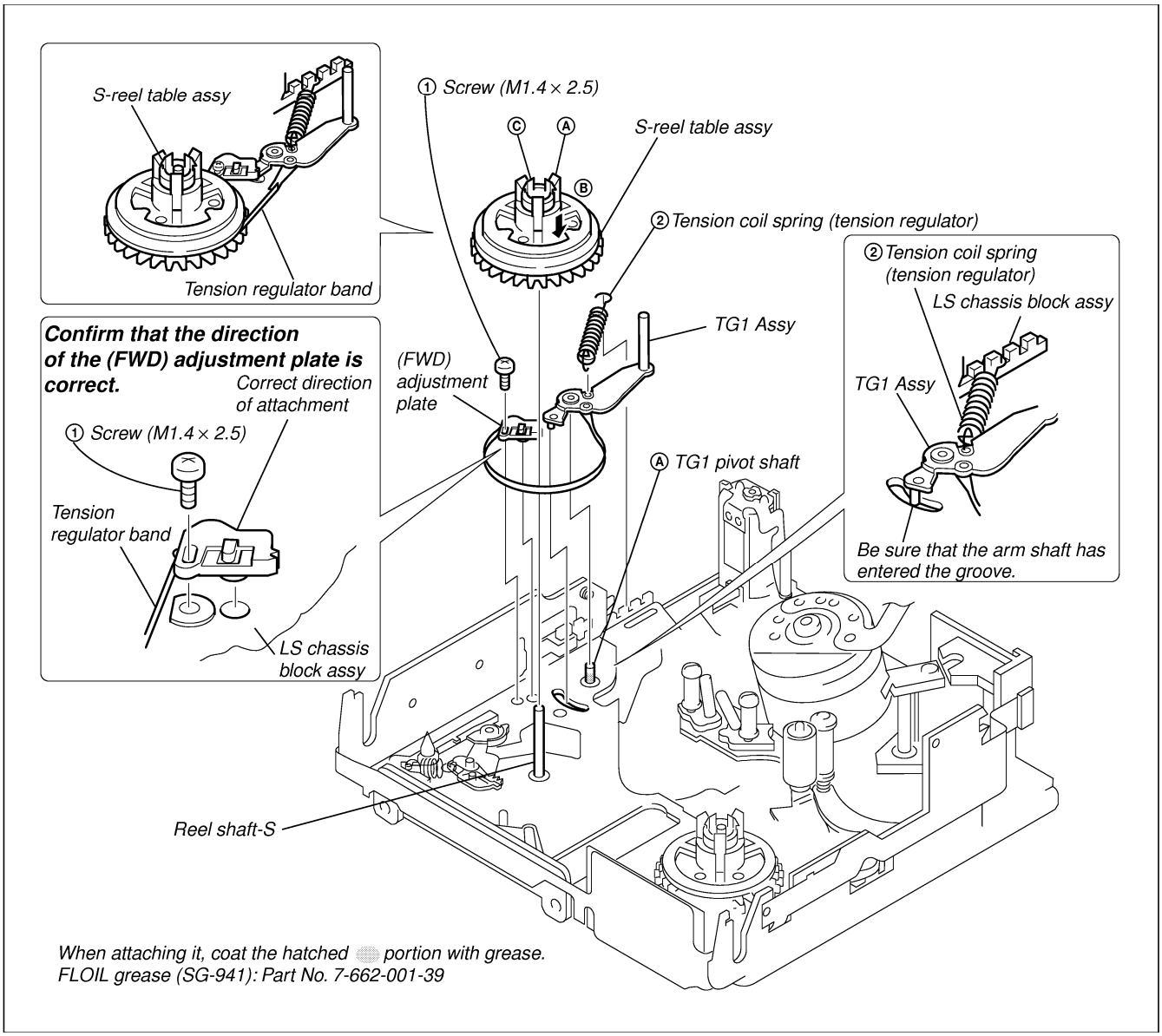
S-reel table assy
Tension regulator band
① Screw (M1.4 × 2.5)
Ⓒ Ⓐ
S-reel table assy
Ⓑ
② Tension coil spring (tension regulator)
TG1 Assy
(FWD) adjustment plate
Ⓐ TG1 pivot shaft
② Tension coil spring (tension regulator)
LS chassis block assy
TG1 Assy
Be sure that the arm shaft has entered the groove.
Confirm that the direction of the (FWD) adjustment plate is correct.
Correct direction of attachment
① Screw (M1.4 × 2.5)
Tension regulator band
LS chassis block assy
Reel shaft-S
When attaching it, coat the hatched portion with grease.
FLOIL grease (SG-941): Part No. 7-662-001-39

Fig. 3-5

3-6. TG1 FWD Position Adjustment

When the TG1 assy or S-reel table is replaced, or when a part constituting these parts is replaced, perform the following adjustment.

• TG1 FWD Position Adjustment
• FWD Back-tension Adjustment (Refer to section 3-7.)
• Reel table (RVS) torque check (Refer to section 3-8.)

1. Adjustment procedure

1) Establish the [RP] mode.
2) Install the TG1 adjustment jig (Ref. No. J-7) as specified by the S/T position setting.
   Note: Be careful not to damage the flexible wiring board.
3) Attach the torque screwdriver (Ref. No. J-11) and the TG1 FWD adjustment screwdriver (Ref. No. J-8) to the adjustment screw block.
4) While rotating the adjustment screwdriver a little, press it down lightly so that it is aligned with the gear of the (FWD) adjustment plate.
5) Loosen the adjustment screw that is tentatively tightened by the torque screwdriver. Perform adjustment so that TG1 comes to the center of the gauge's groove when viewed from directly above the TG1 adjustment jig (Ref. No. J-7). Then tighten the adjustment screw.
   Tightening torque: 0.0588 N•m (0.6 kg•cm).
6) Check again that the TG1 position remains in the correct position, then remove the jig.

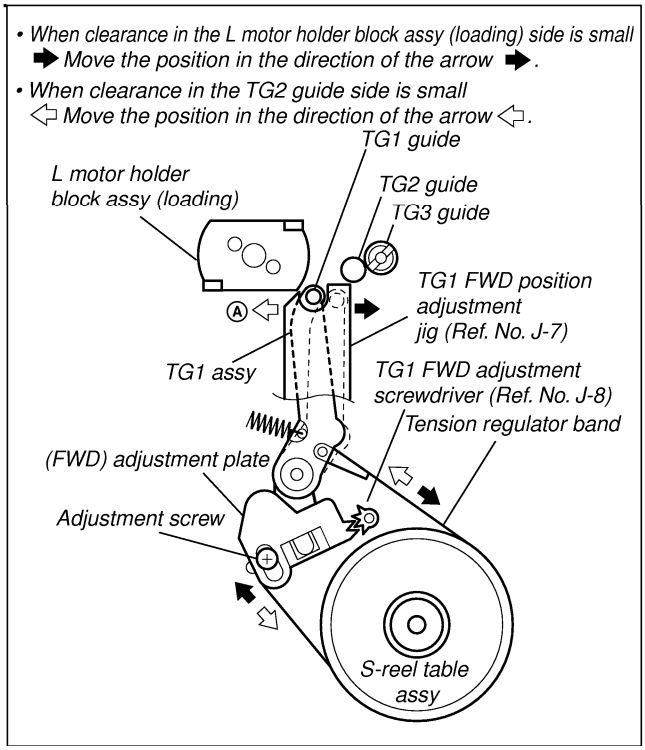
• When clearance in the L motor holder block assy (loading) side is small
Move the position in the direction of the arrow ➡.
• When clearance in the TG2 guide side is small
⇦ Move the position in the direction of the arrow ⇦.
TG1 guide
L motor holder block assy (loading)
TG2 guide
TG3 guide
TG1 FWD position adjustment jig (Ref. No. J-7)
TG1 assy
TG1 FWD adjustment screwdriver (Ref. No. J-8)
Tension regulator band
(FWD) adjustment plate
Adjustment screw
S-reel table assy

Fig. 3-6

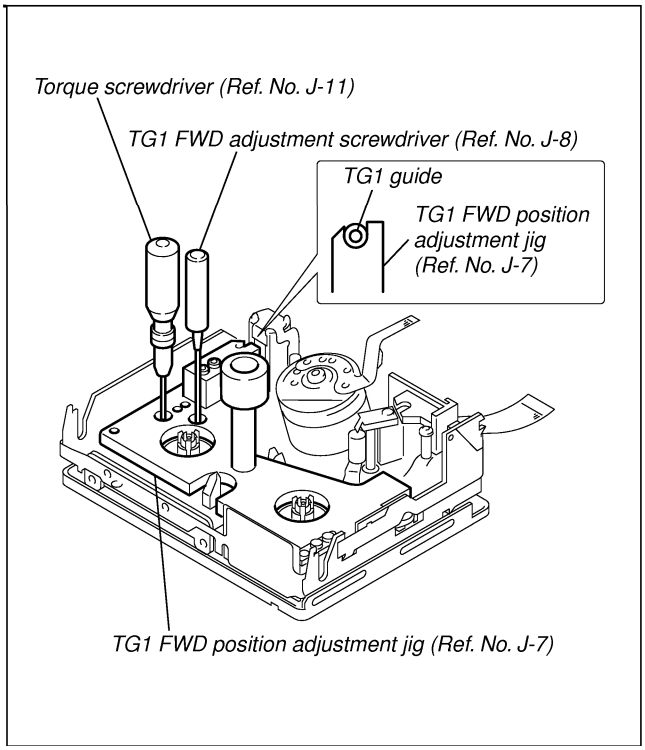
Torque screwdriver (Ref. No. J-11)
TG1 FWD adjustment screwdriver (Ref. No. J-8)
TG1 guide
TG1 FWD position adjustment jig (Ref. No. J-7)
TG1 FWD position adjustment jig (Ref. No. J-7)

Fig. 3-7

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3-7. FWD Back-tension Adjustment

1. Adjustment procedure

1) Install the Mini DV torque cassette (Ref. No. J-6).
2) Set the [RP] mode. Confirm that the torque reading of the supply side is in the range of 0.45 to 0.55 mN•m (4.5 to 5.6 g•cm) including fluctuation. If the torque reading is outside the specified range, perform the following adjustment.

- If the torque reading value is higher than the specification:
  (Reduce the spring tension as follows.)
  Shift the hook position of the tension coil spring in the direction of Ⓐ.
- If the torque reading value is lower than the specification:
  (Increase the spring tension as follows.)
  Shift the hook position of the tension coil spring in the direction of Ⓑ.

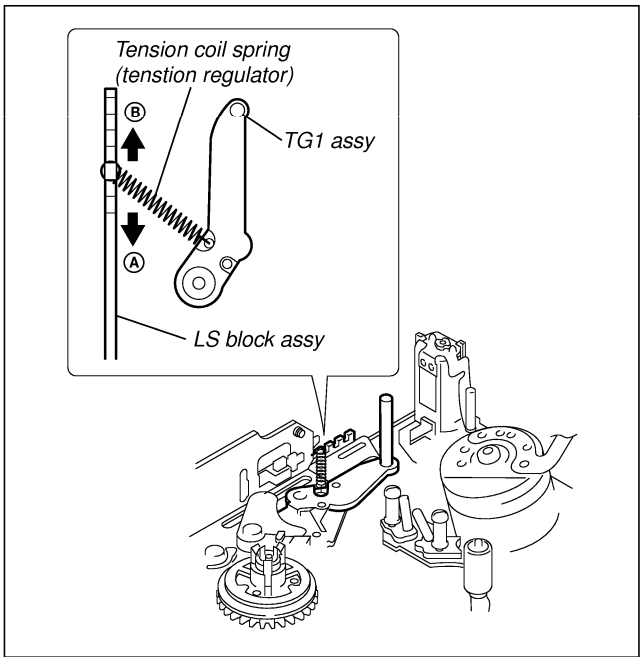

Fig. 3-8

3-8. Reel Torque Check

1. Check procedure

[FWD torque]

1) Install the Mini DV torque cassette (Ref. No. J-6).
2) Set the FWD mode. Confirm that the center of the T-reel table torque reading value is 0.54 to 1.32 (mN•m) (5.5 to 13.5 g•cm) and the fluctuation value is 0.39 to 0.40 (mN•m) (3.9 to 4.0 g•cm).

[RVS torque]

1) Install the Mini DV torque cassette (Ref. No. J-6).
2) Set the RVS mode (by using the EDIT SEARCH (–) button of the machine). Confirm that the center of the S-reel table torque reading value is 1.37 to 2.11 (mN•m) (14 to 21.5 g•cm) and the fluctuation value is 0.39 to 0.40 (mN•m) (3.9 to 4.0 g•cm).

If either of the above specifications is not satisfied, check whether the tension regulator band has any abnormality. If it has no abnormality, replace the corresponding reel table.

3-9. TG3 Guide Zenith Adjustment

1) Remove the drum referring to section 3-1. Install the dummy drum (Ref. No. J-9).
2) Install the TG36 gauge (Ref. No. J-10) on top of the dummy drum. Rotate the slant adjustment zenith screw until the TG3 guide and TG36 gauge (Ref. No. J-10) become parallel.
3) Remove all the jigs. Attach the original drum back in its original position referring to section 3-1.
4) Clean the TG3 and TG4 guides referring to section 2-2.
5) Perform the tape path adjustment. (Refer to section 4, "Tape Path Adjustment".)

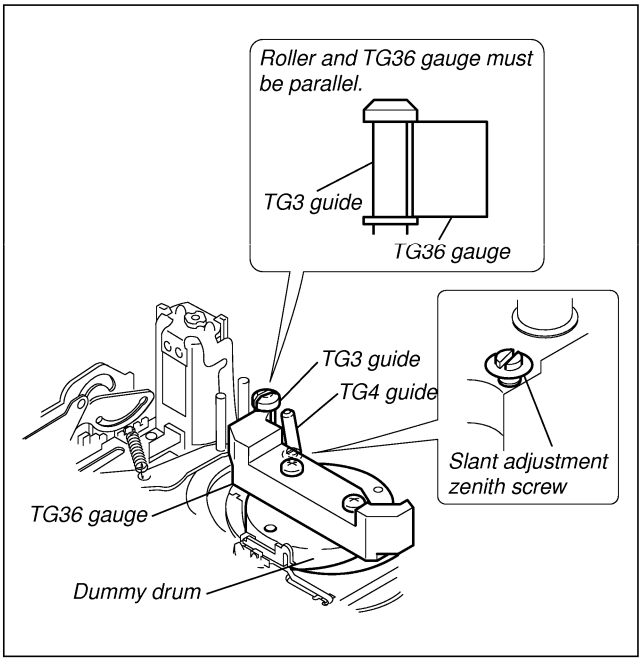

Fig. 3-9

3-10. TG6 Guide Zenith Adjustment

1. Adjustment procedure

1) Remove the drum referring to section 3-1. Install the dummy drum (Ref. No. J-9).
2) Install the TG36 gauge (Ref. No. J-10) on top of the dummy drum. Adjust the slant of the TG6 guide.
3) Rotate the slant adjustment zenith screw until the TG6 guide and TG36 gauge (Ref. No. J-10) become parallel.
4) Remove all the jigs. Attach the original drum back in its original position referring to section 3-1.
5) Clean the TG5 and TG6 guides referring to section 2-2.
6) Perform tape path adjustment. (Refer to section 4, "Tape Path Adjustment".)

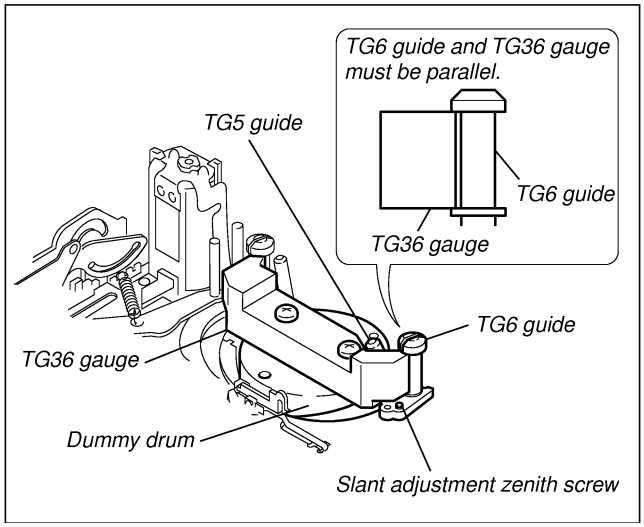

Fig. 3-10

3-11. LS Cam Plate Position Adjustment

1. Adjustment procedure

1) Loosen the LS cam fixing screw (M1.4 × 4) ① by 180 degrees.
2) Establish the STOP mode.
3) While pressing down the center of the LS chassis block assy with force of 100 to 200 gf (0.98 to 1.96 N), move the LS cam plate toward the S-reel side and tighten the LS cam plate fixing screw (M1.4 × 4) ① with force of 500 to 1000 gf (4.9 to 9.8 N).
   Tightening torque: 0.059 to 0.01 N•m (0.6 kg•cm).

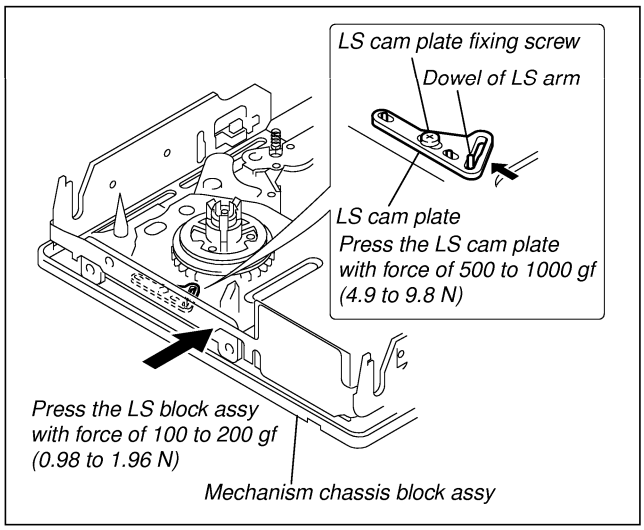
LS cam plate fixing screw
Dowel of LS arm
LS cam plate
Press the LS cam plate with force of 500 to 1000 gf (4.9 to 9.8 N)
Press the LS block assy with force of 100 to 200 gf (0.98 to 1.96 N)
Mechanism chassis block assy

Fig. 3-11

3-12. LS Chassis Block Assy, LS Guide Retainer

1. Removal procedure

1) Remove the FP-100 flexible wiring board from the FPC connector on the FP-102 flexible wiring board.
2) Remove the screw (M1.4 × 2.5) ②. Remove the FPC holder from DC motor (capstan).
3) Remove the two screws (M1.4 × 2) ①.
4) Remove the LS retainer in the direction of the arrow Ⓐ on the top.
5) Remove the E-type stop ring 1.5 ③.
6) Remove the LS chassis block assy in the direction of the arrow Ⓑ.

2. Attachment procedure

1) Confirm that the brake-T block assy has been moved in the counter-clockwise direction Ⓒ. While pressing the TG7 block in the direction of the arrow Ⓓ, insert the LS guide shafts T1 and T2 of the LS chassis block assy into the slots of the mechanism chassis with slanted angle.
2) While inserting the LS arm dowel into the LS cam plate groove, insert the LS guide shafts S1 and S2 into the slots of the LS chassis block assy as shown.
3) Insert the LS guide retainer from the top, align it with the LS guide shafts S1 and S2 and fix it with the screw (M1.4 × 2) ①. Tightening torque: 0.059 to 0.01 N•m (0.6 kg•cm).
4) Confirm that the LS guide retainer has play, is not lifted up, is not installed in opposite direction and has not been deformed.
5) Attach the E-type stop ring 1.5 ③ into the LS guide shaft T1.
6) Insert the FPC holder into DC motor (capstan) in the direction of the arrow Ⓔ and fix it with the screw (M1.4 × 2.5) ②.
7) Connect the flexible wiring board coming from the FP-100 flexible wiring board into the FPC connector.

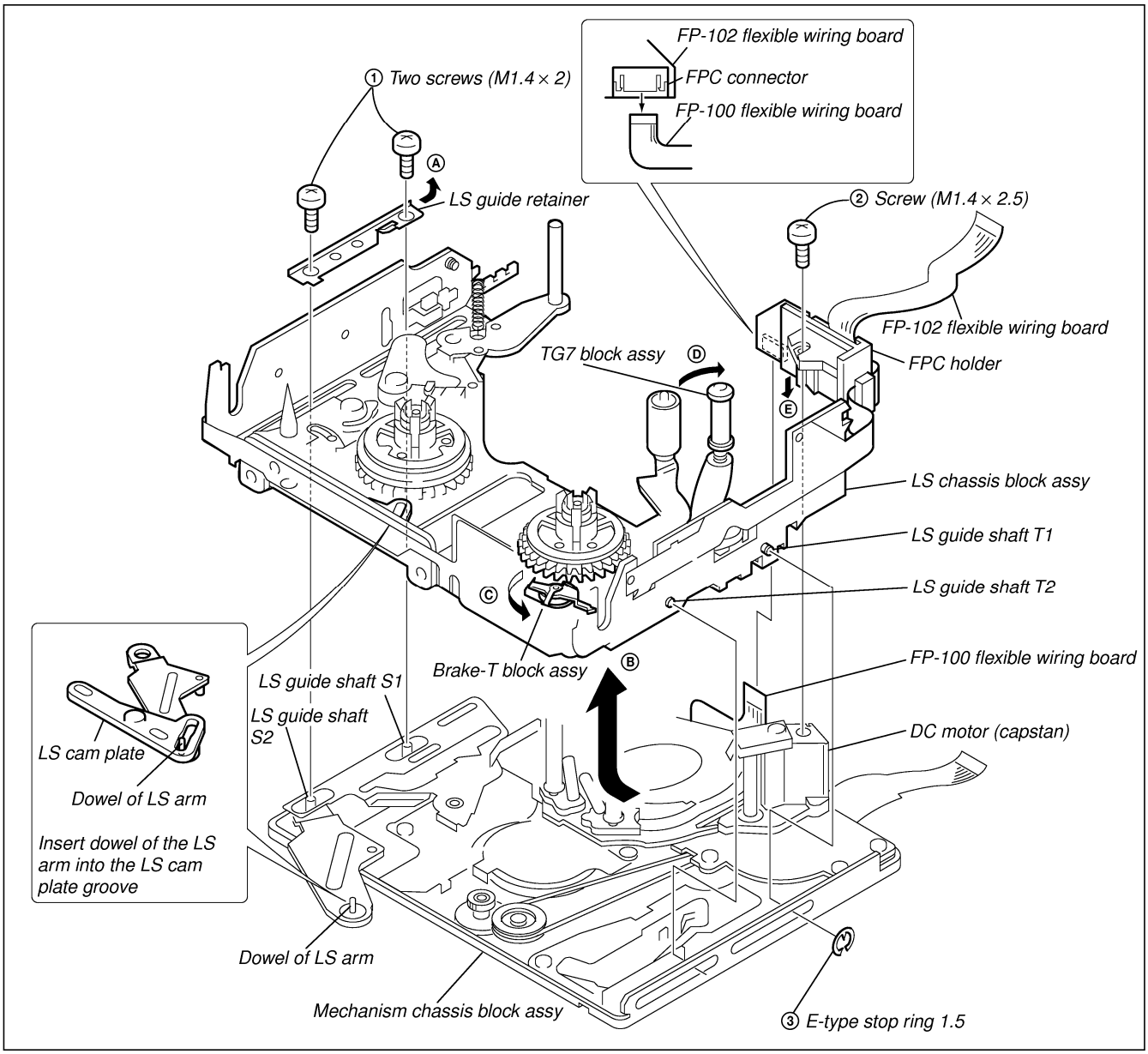

Fig. 3-12

3-13. LS Cam Plate, Tension Coil Spring (Brake-S), Brake-S, Torsion Coil Spring (Brake Arm), Cassette Position Set-S, Brake-S Driving Arm Assy

1. Removal procedure

1) Remove the screw (M1.4 × 1.4) ①.
2) Remove the LS cam plate.
3) Remove the tension coil spring (brake-S).
4) Remove the brake-S.
5) Remove the screw (M1.4 × 2) ②.
6) Remove the torsion coil spring (brake arm).
7) Remove the cassette position set-S from groove of the LS block assy in the direction of the arrow Ⓐ.
8) Remove the brake-S drive arm assy from groove of the LS block assy in the direction of the arrow Ⓑ.

2. Attachment procedure

1) Insert the brake-S drive arm assy under groove of the LS chassis block assy. Attach the brake-S drive arm assy to the brake-S arm shaft and to the brake-S pivot shaft.
2) Insert the cassette position set-S under the groove of the LS chassis block assy. Attach the cassette position set-S to the brake-S arm shaft.
3) Attach the torsion coil spring (brake arm).
4) Attach the screw (M1.4 × 2) ② to the brake-S arm shaft.
5) Attach the brake-S to the brake-S arm bearing and to the brake-S pivot shaft.
6) Hook the tension coil spring (brake-S) to the spring stay of the cassette position set-S and the spring stay of the brake-S.
7) Align the slot of the LS cam plate with the dowel. Move then in the direction toward the arrow Ⓒ and attach the screw (M1.4 × 1.4) ①.
8) Perform the LS cam plate position adjustment referring to section 3-11.

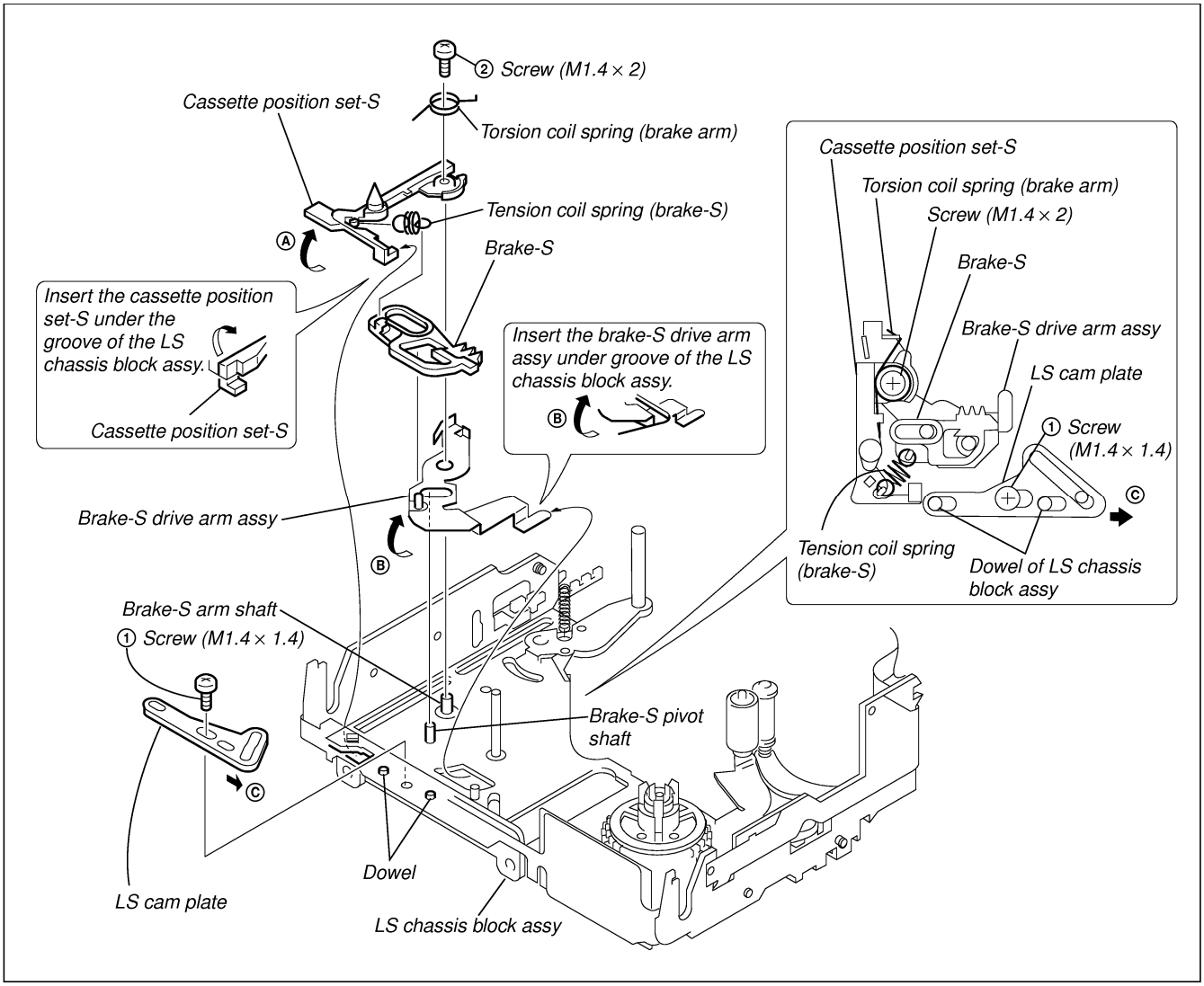
② Screw (M1.4 × 2)
Cassette position set-S
Torsion coil spring (brake arm)
Tension coil spring (brake-S)
Brake-S
Insert the cassette position set-S under the groove of the LS chassis block assy.
Cassette position set-S
Insert the brake-S drive arm assy under groove of the LS chassis block assy.
Brake-S drive arm assy
Brake-S arm shaft
① Screw (M1.4 × 1.4)
Brake-S pivot shaft
Dowel
LS cam plate
LS chassis block assy
Cassette position set-S
Torsion coil spring (brake arm)
Screw (M1.4 × 2)
Brake-S
Brake-S drive arm assy
LS cam plate
① Screw (M1.4 × 1.4)
Tension coil spring (brake-S)
Dowel of LS chassis block assy

Fig. 3-13

3-14. TG7 Block Assy, Torsion Coil Spring (TG7 Return, Pinch Return), Pinch Arm Assy

1. Removal procedure

1) Remove the TG7 block assy in the direction of the arrow Ⓐ.
2) Remove the torsion coil spring (TG7 return) ①.
3) Remove the pinch arm assy in the direction of the arrow Ⓑ.
4) Remove the torsion coil spring (pinch roller return) ②.

2. Attachment procedure

1) Install the torsion coil spring (pinch roller return) ①. (Insert the 90-degree-bent portion of the torsion spring into the square hole of the LS chassis block assy.)
2) Attach the pinch arm assy to the pinch arm bearing.
3) Attach the torsion coil spring (TG7 return) ①.
4) While aligning the TG7 block assy with the groove of the LS chassis block assy, install the TG7 block assy into the TG7 block assy bearing.

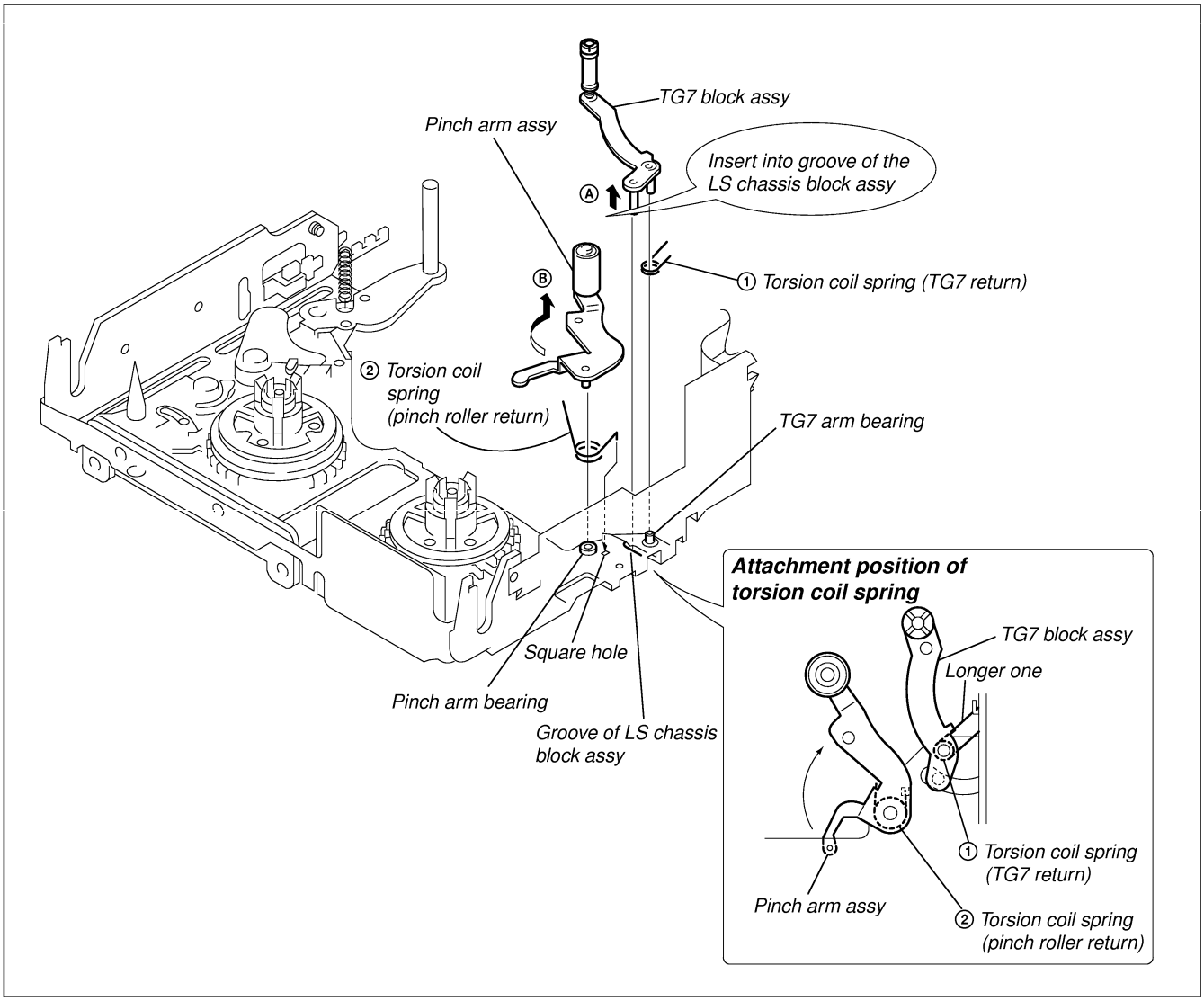
TG7 block assy
Pinch arm assy
Insert into groove of the LS chassis block assy
Ⓐ
Ⓑ
① Torsion coil spring (TG7 return)
② Torsion coil spring (pinch roller return)
TG7 arm bearing
Square hole
Pinch arm bearing
Groove of LS chassis block assy
Attachment position of torsion coil spring
TG7 block assy
Longer one
① Torsion coil spring (TG7 return)
Pinch arm assy
② Torsion coil spring (pinch roller return)

Fig. 3-14

3-15. Layout Diagram of FP-102 Flexible Wiring Board

1. Removal procedure

1) Remove the sensor holder-T from groove of the LS chassis block assy in the direction of the arrow Ⓐ.
2) Remove the cassette holder-S by pushing out the hook under the LS chassis block assy towards the direction of the arrow Ⓑ.

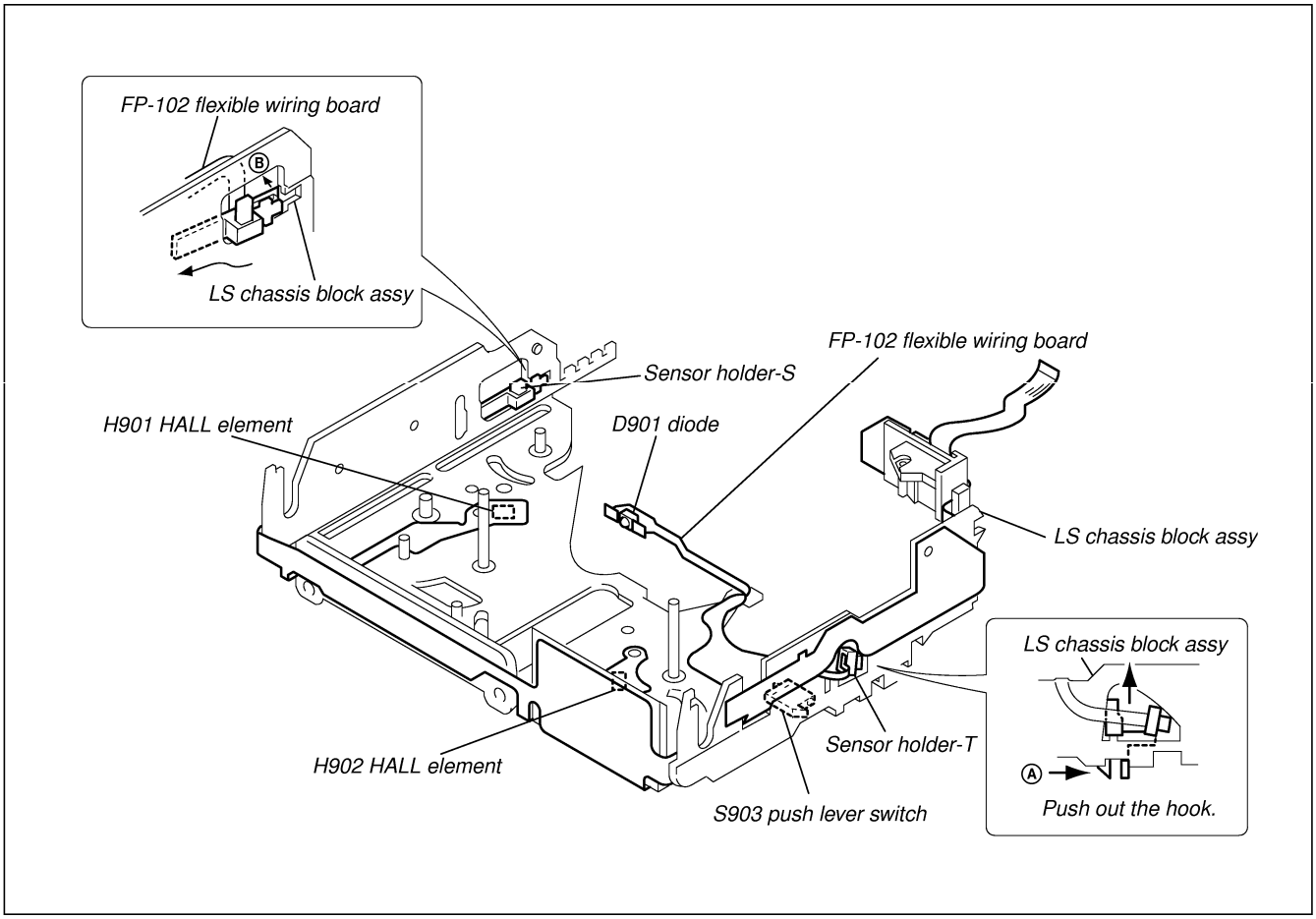

Fig. 3-15

3-16. TG1 Cam Slider, LS Arm, LS Roller, Mode Gear Assy, LS Guide Roller

1. Removal procedure

1) Remove the TG1 cam slider.
2) Remove the LS arm. (At this moment, be careful that the LS roller can come out of cam gear A groove.)
3) Remove the LS roller from the LS arm.
4) Remove the LS guide roller.

2. Attachment procedure

1) Coat inside the LS guide roller with grease (1/4 drop of grease) and insert it into the LS guide shafts S1 and S2.
2) Coat outside the LS guide roller with grease (1/2 drop of grease) at the two points as shown.
3) While aligning dowel of the TG1 drive arm with groove of the mode gear assy, insert the TG1 drive arm into the LS guide shaft S1.
4) Coat the portion Ⓐ of the LS arm with grease (1/4 drop of grease) and insert the LS guide roller.
5) Coat both sides of the groove of the cam gear A with grease (1/2 drop of grease). Insert the LS guide roller into groove of the cam gear A and insert the LS arm into the LS guide shaft S2.
6) Insert the TG1 cam slider into the three positions of the LS guide shaft S1, S2 and slider guide shaft. Insert dowel of the TG1 cam slider into groove of the cam gear A.
7) Be careful that greasing points are correct, amount of grease is correct and the LS arm and the TG1 drive arm are not floating.

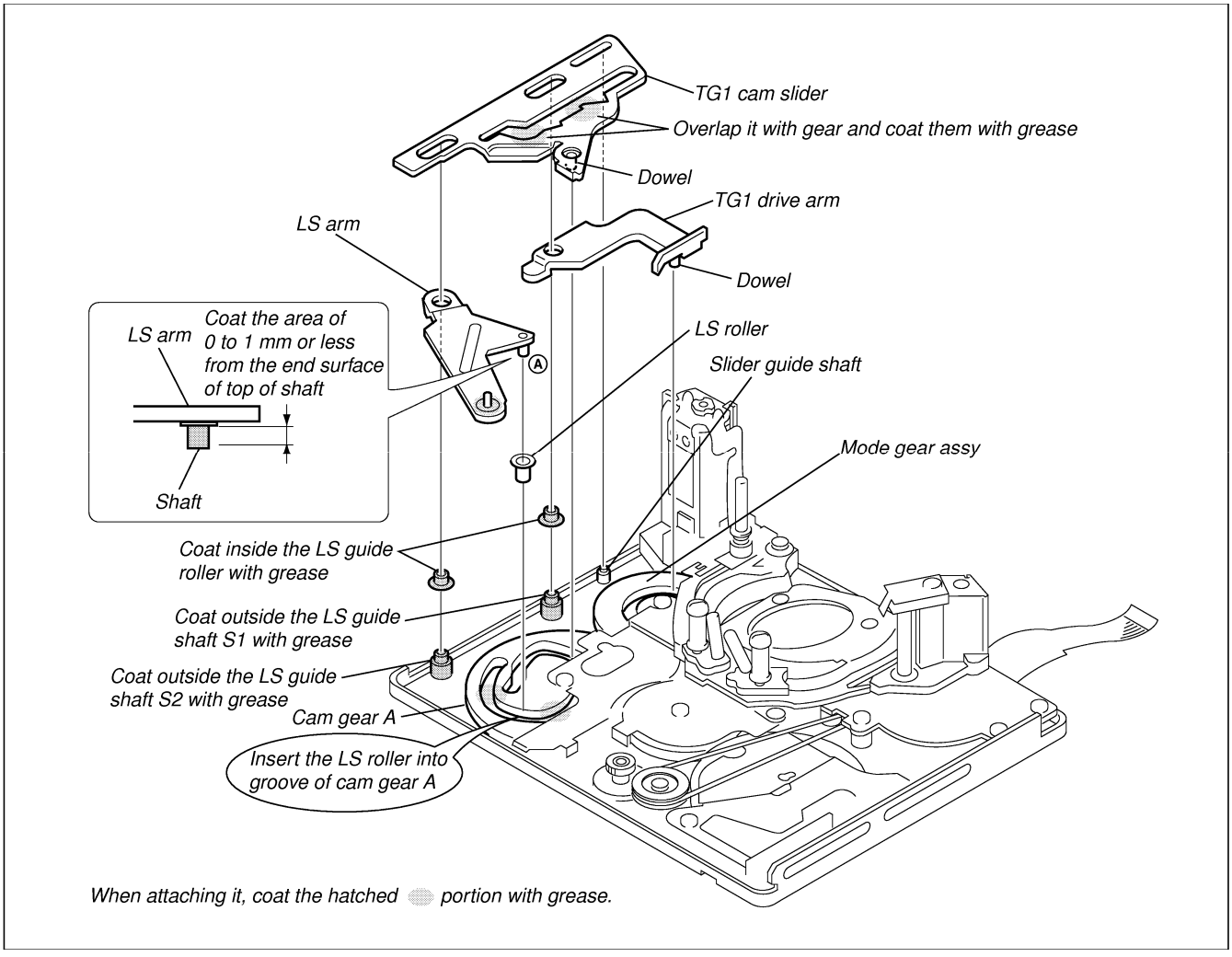
TG1 cam slider
Overlap it with gear and coat them with grease
Dowel
TG1 drive arm
LS arm
Dowel
LS arm
Coat the area of 0 to 1 mm or less from the end surface of top of shaft
Shaft
Ⓐ
LS roller
Slider guide shaft
Mode gear assy
Coat inside the LS guide roller with grease
Coat outside the LS guide shaft S1 with grease
Coat outside the LS guide shaft S2 with grease
Cam gear A
Insert the LS roller into groove of cam gear A
When attaching it, coat the hatched portion with grease.

Fig. 3-16

3-17. Guide Rail

1. Removal procedure

1) Remove the screw (M1.4 × 2) ①.
2) When removing the guide rail, be careful that claws of the drum base block assy are fully released. Remove the S-side rail, T-side rail and rail of DC motor side in this order.

2. Attachment procedure

1) Engage the claws of the guide rails with the claws of the drum base block assy starting engaging the claw from the T-side rail and S-side rail.
   Note: There must no deformation of guide rail, claws must not be broken, claws must not override, claws must not become white, not be stained or have no play.
2) Fix the guide rail with the screw (M1.4 × 2) ①.
   Tightening torque: 0.059 ± 0.01 N•m (0.6 kg•cm)

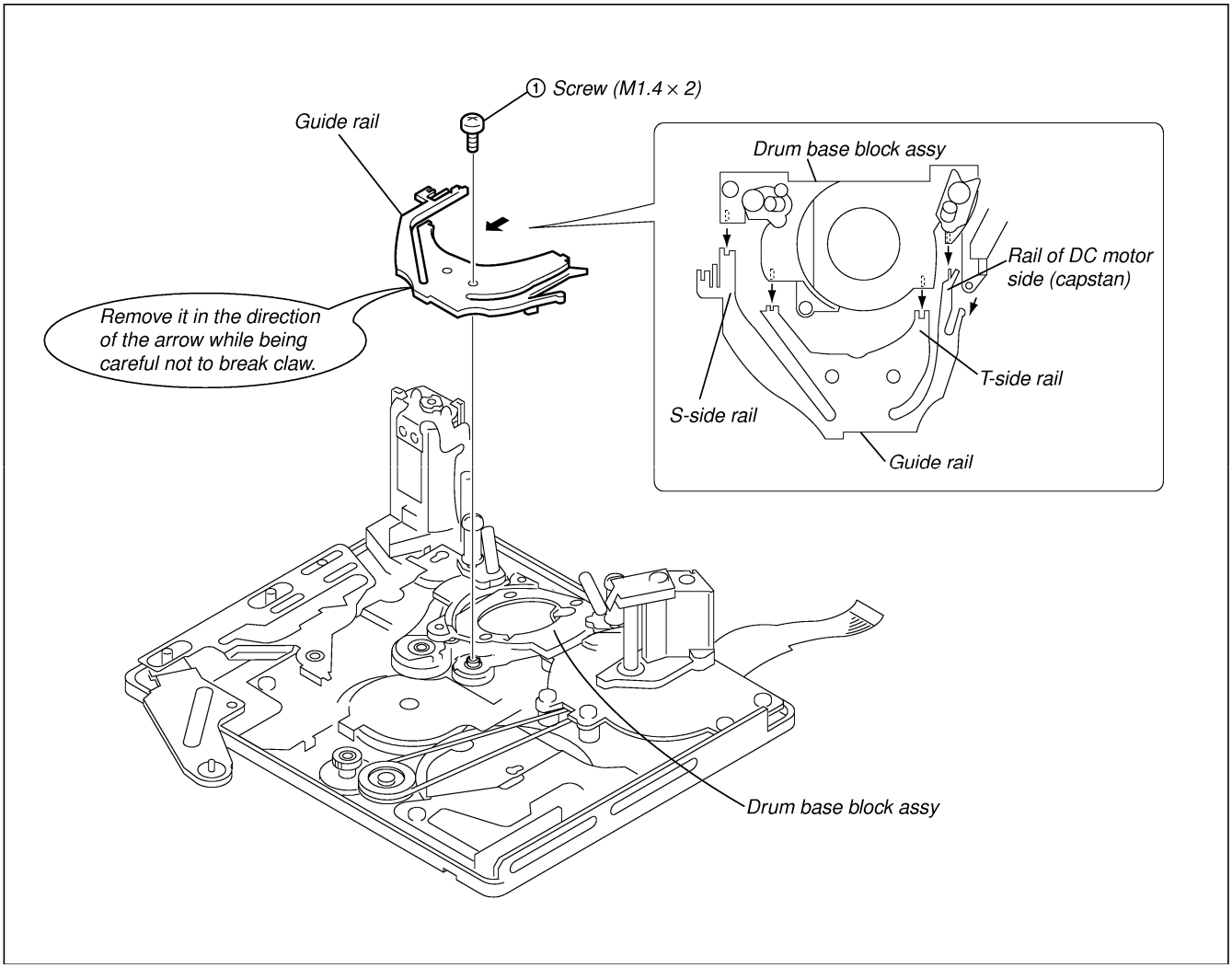
① Screw (M1.4 × 2)
Guide rail
Drum base block assy
Rail of DC motor side (capstan)
Remove it in the direction of the arrow while being careful not to break claw.
T-side rail
S-side rail
Guide rail
Drum base block assy

Fig. 3-17

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3-18. Gear Cover B, GL Driving Gear

1. Removal procedure

1) Remove the screw (M1.4 × 2) ①.
2) Remove the gear cover B in the direction of the arrow Ⓐ.
3) Remove the GL drive gear.

2. Attachment procedure

1) Coat the cam gear A and the GL drive gear with grease (1/2 drop). (Refer to Fig. 2.)
2) Refer to Fig. 1. While adjusting phase of the GL drive gear as shown, insert the GL drive gear into the GL drive shaft. (Insert it while moving the GL drive gear in the clockwise direction.)
3) Insert the two claws of the gear cover B into the square holes of mechanism chassis.
4) Fix the GL drive shaft with the screw (M1.4 × 2) ①. Be sure that the gear cover B must not have any play.
   Tightening torque: 0.059 ± 0.01 N•m (0.6 kg•cm)

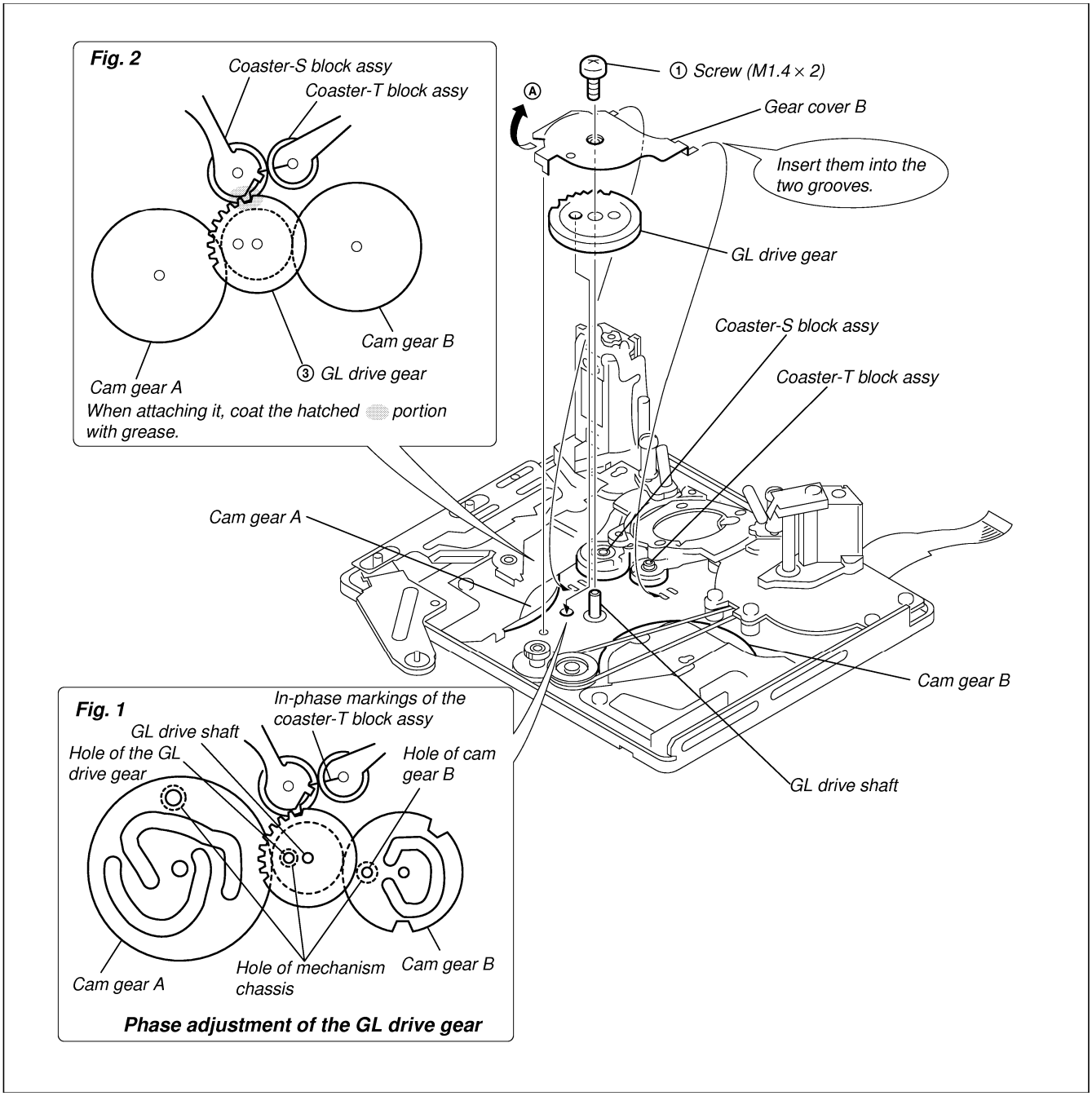

Fig. 3-18

3-19. Drum Base Block Assy, Coaster-S Block Assy, Coaster-T Block Assy

1. Removal procedure

1) Remove three screws (M1.4 × 2.5).
2) Move the coaster-S block assy and coaster-T block assy out from the drum base groove in the direction of the arrow Ⓐ.
3) Remove the drum base block assy.
4) Remove the coaster-S block assy from the GL gear shaft-S.
5) Remove the coaster-T block assy from the GL gear shaft-T.

2. Attachment procedure

1) Insert a coaster-S block assy and coaster-T block assy into the drum base groove.
2) Place a drum base block assy on top of the mechanism chassis assy. Insert a coaster-T block assy into the GL gear shaft-T.
3) Insert a coaster-S block assy in the oblique direction. While adjusting phase so that the spring of coaster-S block assy agrees with the GL gear lever marking of the coaster-T block assy, insert a coaster-S block assy into the GL gear shaft-S.
   Note: • There must be no phase difference.
   • Do not remove coaster-S block assy and coaster-T block assy from the drum base block assy.
4) Determine the exact position of the drum base block assy that has been tentatively placed, on the mechanism chassis assy. Tighten the screws at Ⓐ, Ⓑ and Ⓒ in this order.
   Tightening torque: 0.059 ± 0.01 N•m (0.6 kg•cm)

Note: Be careful that the position setting boss of drum base block assy does not override on the mechanism chassis.

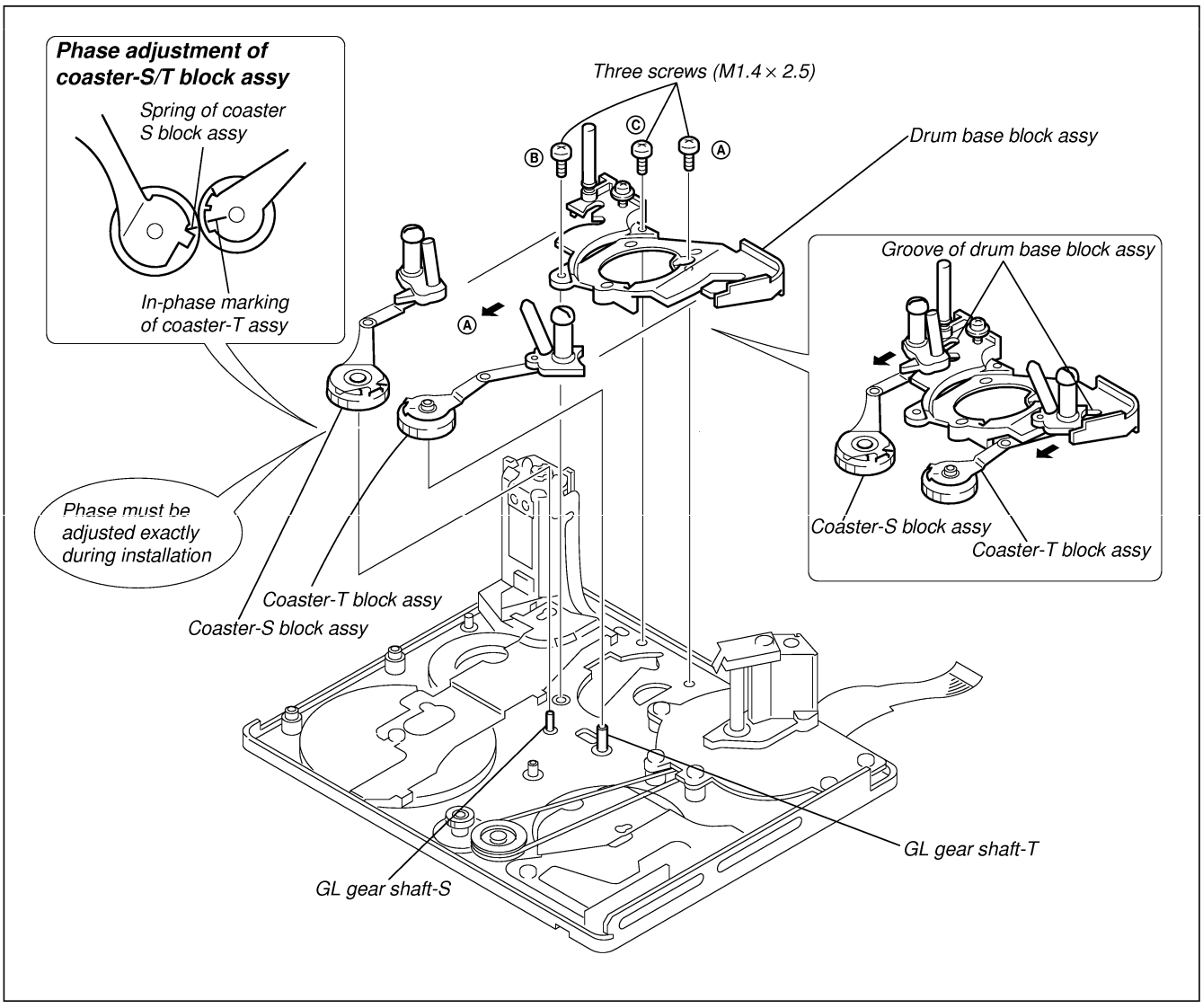
Phase adjustment of coaster-S/T block assy
Spring of coaster S block assy
In-phase marking of coaster-T assy
Three screws (M1.4 × 2.5)
Drum base block assy
Groove of drum base block assy
Phase must be adjusted exactly during installation
Coaster-T block assy
Coaster-S block assy
Coaster-S block assy
Coaster-T block assy
GL gear shaft-T
GL gear shaft-S

Fig. 3-19

3-20. DC Motor (Capstan), Conversion Gear, Relay Gear

1. Removal procedure

1) Remove the three screws (M1.4 × 2) ①.
2) Remove DC motor (capstan). Remove belt from the pulley of conversion gear.
3) Remove conversion gear.
4) Remove relay gear.

2. Attachment procedure

1) Coat relay gear shaft and conversion gear shaft with grease (1/8 drop). (Amount of grease must be strictly controlled.)
2) With the larger gear of the relay gear positioned down, attach the relay gear to the relay gear shaft.
3) With the pulley side of the conversion gear positioned up, engage the conversion gear teeth with the relay gear teeth, and install them.
4) Before installing the DC motor (capstan (including belt)), check that belt is not twisted. Hook a belt on the pulley block of conversion gear. Align three shafts with corresponding holes. At this moment, confirm that belt does not override on the shaft.
5) Install DC motor (capstan) with three screws (M1.4 × 2) ① in the order of Ⓐ, Ⓑ and Ⓒ.
   Ⓐ, Ⓑ, Ⓒ tightening torque
   Ⓐ tightening torque: 0.059 ± 0.01 N•m (0.6 kg•cm)
   Ⓑ and Ⓒ tightening torque: 0.038 ± 0.01 N•m (0.4 kg•cm)

Note: Be careful that gears and belts are not damaged or dust is not attached. Be careful also not to splash grease.

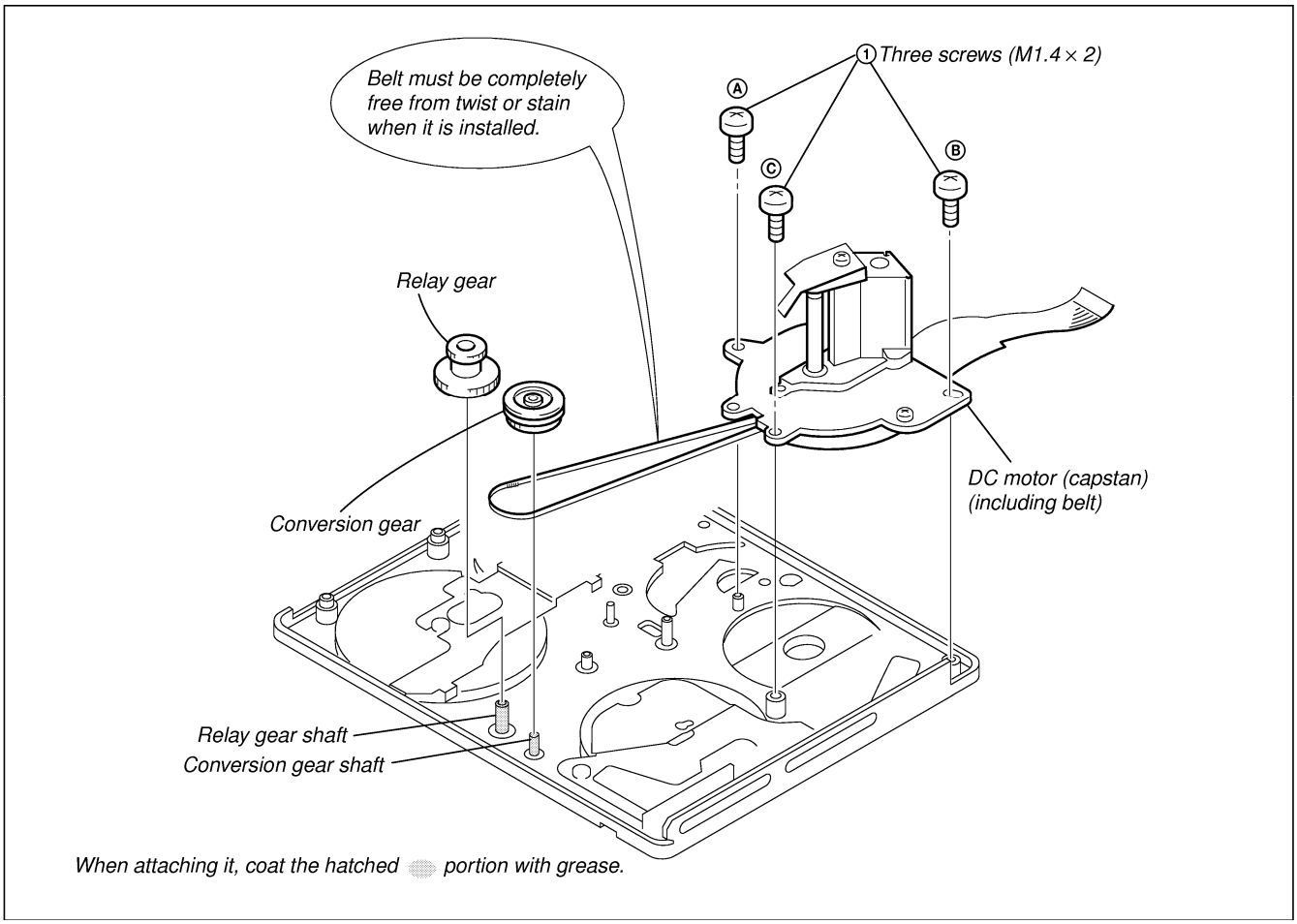
Belt must be completely free from twist or stain when it is installed.
① Three screws (M1.4 × 2)
Ⓐ
Ⓑ
Ⓒ
Relay gear
Conversion gear
DC motor (capstan) (including belt)
Relay gear shaft
Conversion gear shaft
When attaching it, coat the hatched portion with grease.

Fig. 3-20

3-21. Gear Cover C, Pinch Driving Arm Assy, Cam Gear B

1. Removal procedure

1) Remove the screw (M1.4 × 2) ①.
2) Move the key slot of the gear cover C in the direction of the arrow Ⓐ and remove the gear cover C.
3) Remove the pinch drive arm assy.
4) Remove the cam gear B.

2. Attachment procedure

1) Identify the front side and the rear side of a cam gear B. Align the cam gear B shaft, the gear phasing hole and the LS chassis hole. Then attach the cam bear B. coat groove of a cam gear with grease (1/2 drop).
2) Align the pinch drive arm assy with the pinch drive pivot shaft. While aligning dowel with the cam groove of the cam gear B, insert the pinch drive arm assy.
3) Insert the "one-step bent portion" of gear cover C into notch of the chassis, insert the cam gear B shaft into the key hole of the gear cover. C.
4) Insert the gear cover C into the pinch drive pivot shaft and fix it with the screw (M1.4 × 2) ①. After tightening the screw (M1.4 × 2) ①, move the gear cover C in order to confirm that there is a little play.
   Tightening torque: 0.059 ± 0.01 N•m (0.6 kg•cm)

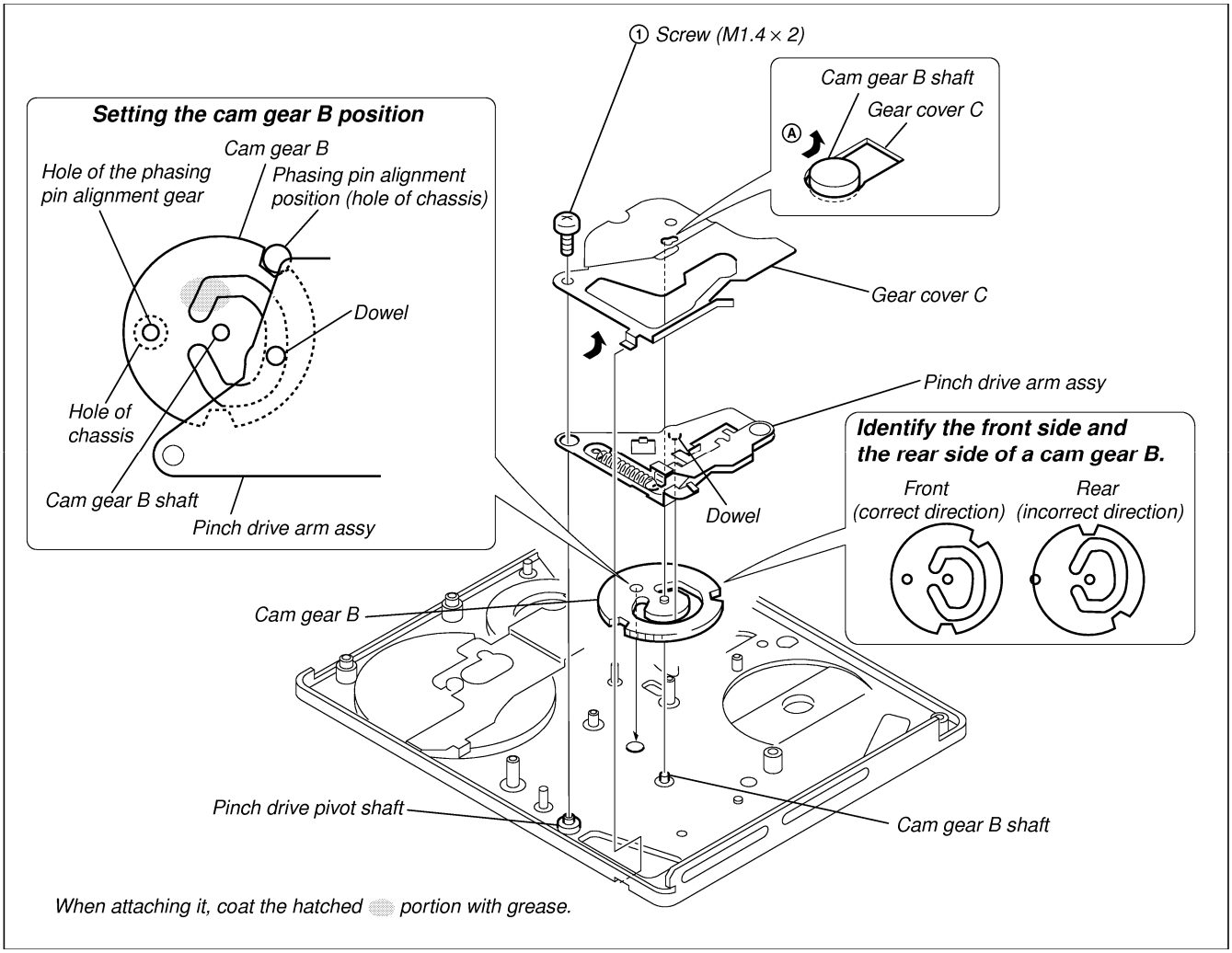
① Screw (M1.4 × 2)
Cam gear B shaft
Gear cover C
Ⓐ
Setting the cam gear B position
Cam gear B
Hole of the phasing pin alignment gear
Phasing pin alignment position (hole of chassis)
Dowel
Hole of chassis
Cam gear B shaft
Pinch drive arm assy
Gear cover C
Pinch drive arm assy
Identify the front side and the rear side of a cam gear B.
Front (correct direction)
Rear (incorrect direction)
Dowel
Cam gear B
Pinch drive pivot shaft
Cam gear B shaft
When attaching it, coat the hatched portion with grease.

Fig. 3-21

3-22. Gear Cover A, FP-100 Flexible Wiring Board

1. Removal procedure

1) Remove the screw (M1.4 × 2) ①.
2) Remove the gear cover A in the direction of the arrow Ⓐ.
3) Remove the screw (M1.4 × 2.5) ②.
4) Remove soldering from the motor terminal and FP-228 flexible wiring board (DEW sensor) that are used to connect the FP-100 flexible wiring board with the motor holder block assy.
5) Remove the motor holder block assy.

2. Attachment procedure

1) Align the motor holder block assy position with the chassis square hole and round hole. The press the motor holder block assy with finger.
   Note: Coat the worm shaft with grease (1/2 size of a rice gain).
2) Fix the motor holder block assy with the screw (M1.4 × 2.5) ②.
   Tightening torque: 0.059 ± 0.01 N•m (0.6 kg•cm)
3) Install the gear cover A as follows: Hook the shaft with the key slot and align the U-groove with the cam gear A shaft. Confirm at this time that there is a play.
4) Attach the gear cover A to the cam gear A shaft and fix them with the screw (M1.4 × 2) ①.
   Tightening torque: 0.059 ± 0.01 N•m (0.6 kg•cm)
5) Connect the FP-100 flexible wiring board with the motor holder block assy (motor terminal and FP-228 flexible wiring board (DEW sensor)) by soldering.
   Note: Do not touch the DEW sensor.

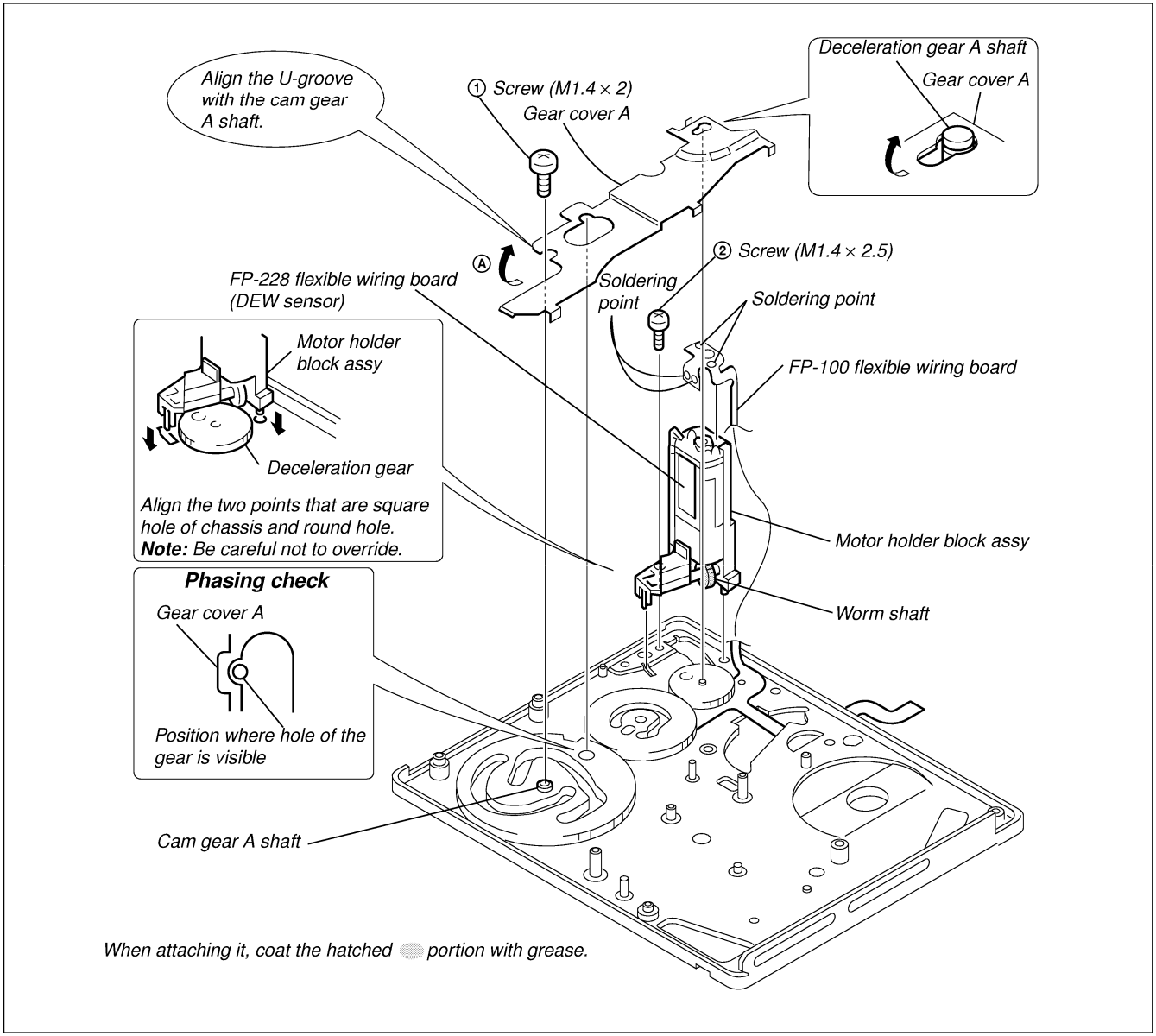
Align the U-groove with the cam gear A shaft.
① Screw (M1.4 × 2)
Gear cover A
Deceleration gear A shaft
Gear cover A
Ⓐ
② Screw (M1.4 × 2.5)
FP-228 flexible wiring board (DEW sensor)
Soldering point
Soldering point
FP-100 flexible wiring board
Motor holder block assy
Deceleration gear
Align the two points that are square hole of chassis and round hole.
Note: Be careful not to override.
Motor holder block assy
Phasing check
Gear cover A
Worm shaft
Position where hole of the gear is visible
Cam gear A shaft
When attaching it, coat the hatched portion with grease.

Fig. 3-22

3-23. Deceleration Gear, Mode Gear Assy, FP-100 Flexible Wiring Board, Cam Gear A

1. Removal procedure

1) Remove the deceleration gear.
2) Remove the screw (M1.4 × 2) ①.
3) Remove the cam gear A.
4) Remove the mode gear assy.
5) Remove the FP-100 flexible wiring board.

Note 1: Do not touch the foil pattern area of the FP-100 flexible wiring board. Any foreign materials must not be adhered.
Note 2: Do not remove the mode gear assy unnecessarily.

2. Attachment procedure

1) Install the FP-100 flexible wiring board to the mechanism chassis. Confirm that flexible wring board is not stained, broken, bent or damaged.
2) Coat the entire contact points of the mode pattern area of the FP-100 flexible wiring board with the contact-point grease (equivalent to 1.5 drops). (Any foreign materials must not be mixed in the contact-point grease.)
3) Attach the mode gear assy to the mode gear shaft.
4) Install the deceleration gear as follows: Position the deceleration gear with its small gear down, and engage the small gear tooth with the mode gear tooth. Rotate the gear tooth until the phasing marking of the mode gear assy arrives at the phasing position of the cam gear A.
5) Identify the front and rear sides of the cam gear A. Confirm that the marking of the cam gear A and that of the mode gear assy agree.
6) Attach the screw (M1.4 × 2) ① of the mode gear assy. Tightening torque: 0.059 ± 0.01 N•m (0.6 kg•cm)
7) Connect the FP-100 flexible wiring board to the motor holder block assy by soldering in accordance with section "3-22 [2. Attachment procedure] step 7.

Note 1: If the FP-100 flexible wiring board is removed, replace it with a new FP-100 board, and do not use the removed FP-100 flexible wiring board.
Note 2: Cautions when attaching the FP-100 flexible wiring board:
① It must not override on the mode gear shaft.
② It must be aligned with the position setting hole.
③ It must no float, must not have stain or must not be broken.
④ Never touch the foil pattern area with hand.

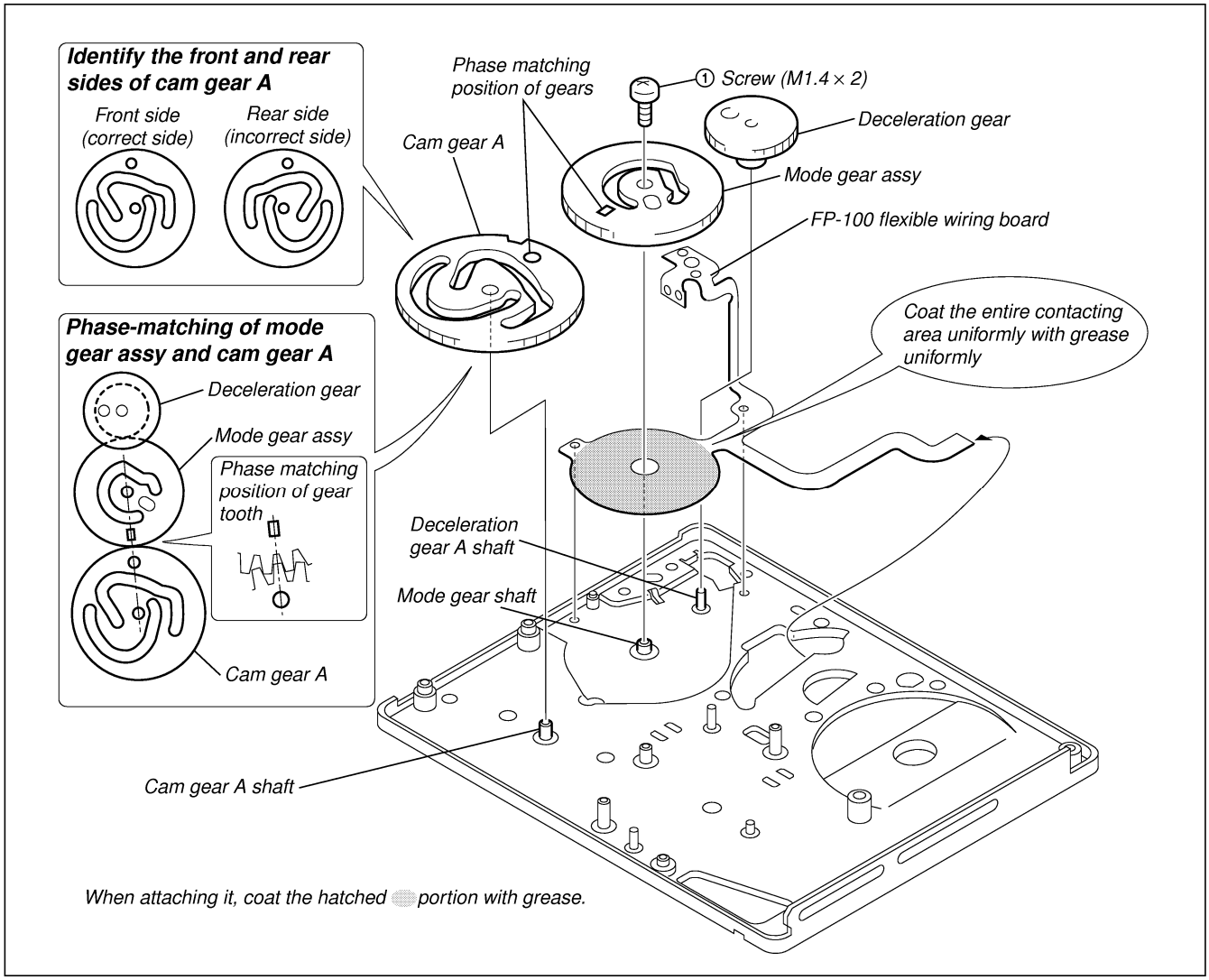
Identify the front and rear sides of cam gear A
Front side (correct side)
Rear side (incorrect side)
Phase-matching of mode gear assy and cam gear A
Deceleration gear
Mode gear assy
Phase matching position of gear tooth
Cam gear A
Phase matching position of gears
Cam gear A
① Screw (M1.4 × 2)
Deceleration gear
Mode gear assy
FP-100 flexible wiring board
Coat the entire contacting area uniformly with grease uniformly
Deceleration gear A shaft
Mode gear shaft
Cam gear A shaft
When attaching it, coat the hatched portion with grease.

Fig. 3-23

4. Tape Path Adjustment

4-1. Adjustment Preparation

1) Clean the tape running surface (tape guides, drum, capstan, pinch roller) referring to Service Manual.
2) Connect adjustment remote commander (Ref. No. J-13) to the LANC terminal of the machine. Set the HOLD switch to ON.
3) Connect an oscilloscope to the VC-240 board CN009 via the CPC-8 jig (J-082-388-A). (in the case of DCR-TRV20).
   Scope channel 1: VC-240 board CN009 pin ⑳ (Note)
   External trigger: VC-240 board CN009 pin ⑰
   Note: Connect CN009 pin ⑳ and pin ⑲ (GND) with 75 Ω resistor (1-247-804-11).
4) Play the tracking alignment tape (XH2-1)(Ref. No. J-5) back.
5) Select page: 3, address: 33 and data: 08. (Note)
6) Select page: 3, address: 26 and data: 31. (Note)
7) Confirm that RF waveform on scope is flat in both entrance side and exit side. (Refer to Fig. 4-2 Ⓐ).
   If RF waveform is not flat in entrance side and exit side, perform the adjustment of section 4-2. and later. (Refer to Fig. 4-2 Ⓑ and Ⓒ).
8) When the required conditions of step 7) are satisfied and adjustment/check are complete, perform [Required work upon completion of adjustment] as described below.

[Required work upon completion of adjustment]

1) Connect adjustment remote commander (Ref. No. J-13) to the LANC terminal of the machine. Set the HOLD switch to ON.
2) Select page: 3, address: 26 and data: 00. (Note)
3) Select page: 3, address: 33 and data: 00. (Note)

Note: Page and address numbers differ depending on each model. Please refer to Service Manual of respective models. Those of DCR-TRV20 are described above.

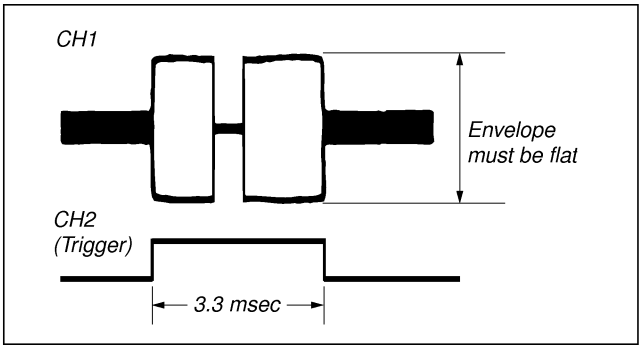

Fig. 4-1

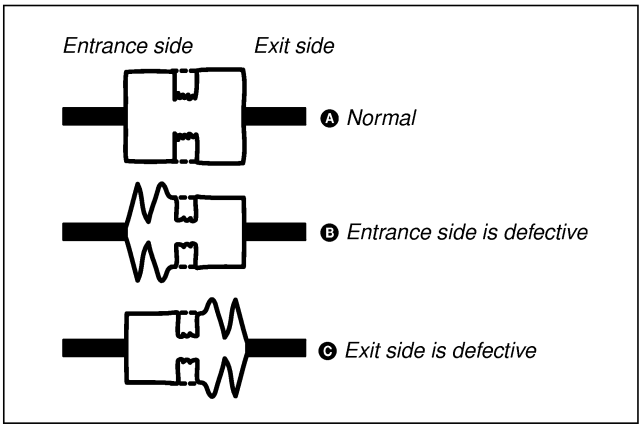

Fig. 4-2

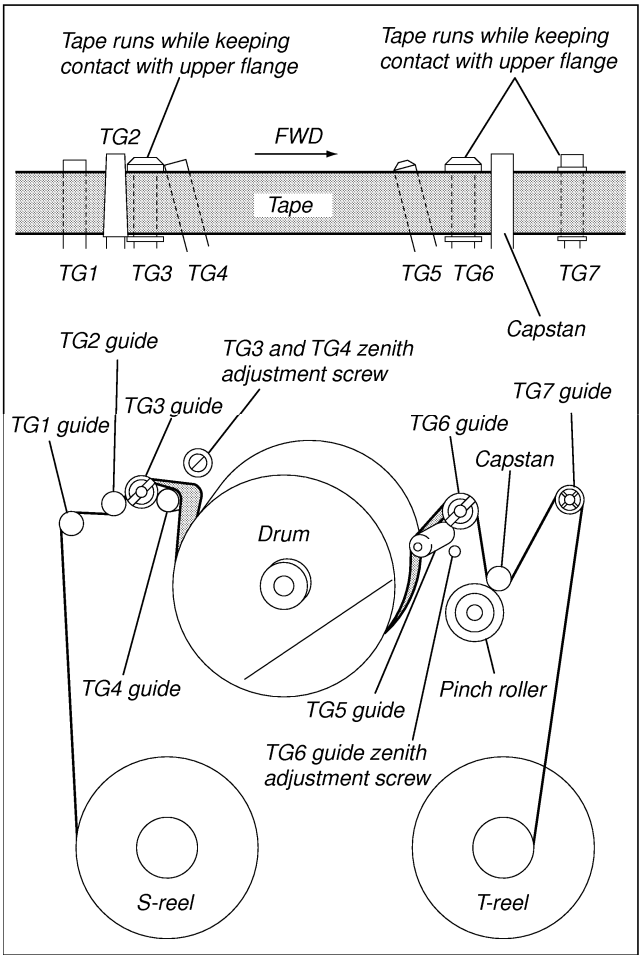

Fig. 4-3

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4-2. Tracking Adjustment

1) Play the tracking alignment tape (XH2-1) (Ref. No. J-5) back.
2) Adjust TG3 guide until the envelope of entrance side waveform becomes flat.
3) Adjust TG6 guide until the envelope of exit side waveform becomes flat.

Note: Do not touch or adjust TG3 and TG4 guide zenith adjustment screw.

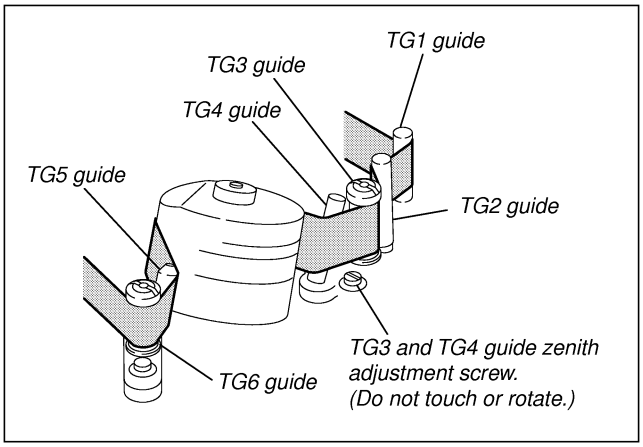


Fig. 4-4

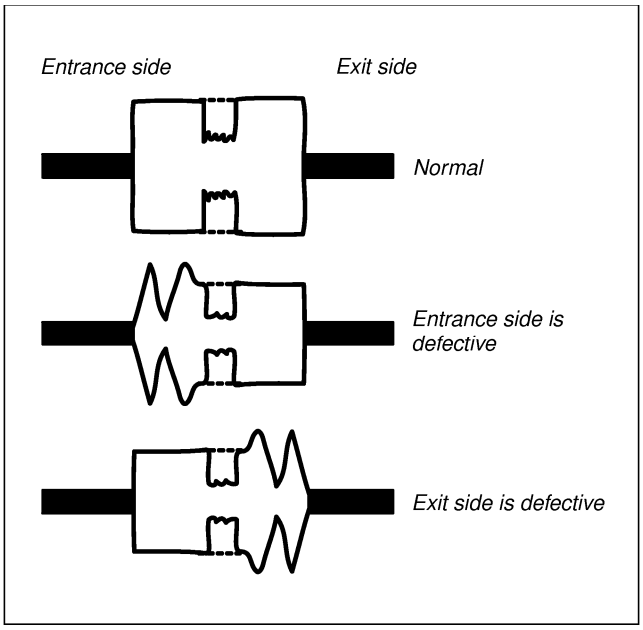


Fig. 4-5

4-3. TG3 Guide Adjustment

1) Play the tracking alignment tape (XH2-1) (Ref. No. J-5) back.
2) Run the tape in FWD mode. Confirm that tape runs while keeping contact with upper flange of TG3. If any clearance is found between top flange and tape, rotate the adjustment nut in clockwise direction until tape runs while keeping contact with upper flange of TG3.

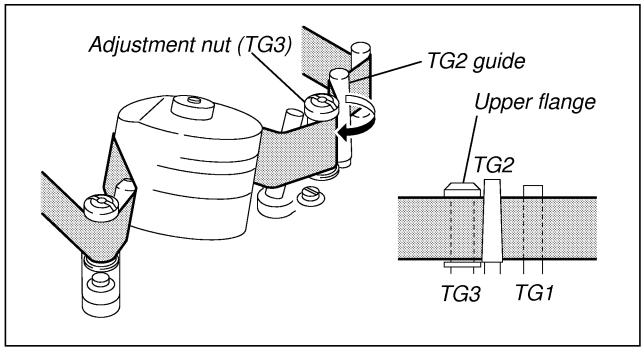


Fig. 4-6

When tape runs while keeping contact with upper flange of TG3, confirm that the tracking waveform does not change. If the tracking waveform has poor amplitude at the entrance side as shown, perform tracking adjustment of entrance side.

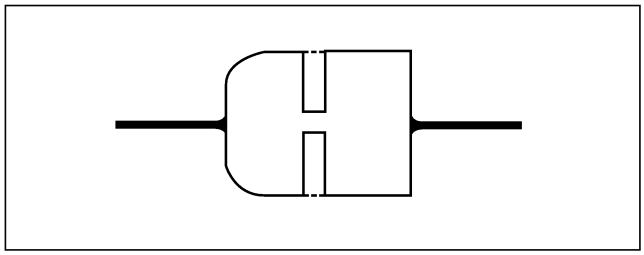


Fig. 4-7

After entrance side is adjusted, establish the RVS mode. Make an attempt to rotate the TG3 adjustment nut by 180 degrees in the counter-clockwise direction in order to confirm that tape rises upward. Upon confirmation, return the TG3 adjustment nut to the original position.

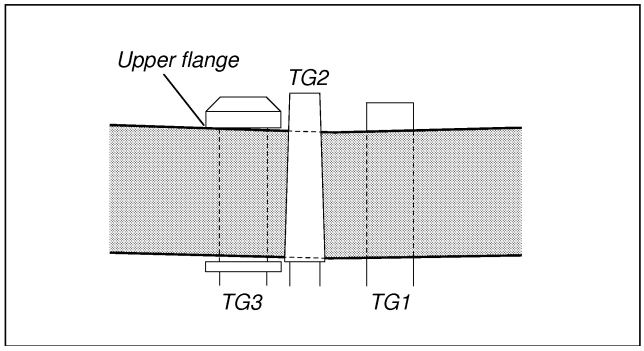


Fig. 4-8

4-4. TG7 Guide Adjustment

1) Establish the FWD mode. Confirm that tape slack does not occur in between capstan and TG7 guide. (Specification value: 0.5 mm or less of tape slack) If any tape slack occurs, rotate the tG7 guide to remove the tape slack.
2) Establish the REV mode. Confirm that RF waveform at exit side is normal. (Refer to Fig. 4-10.)
3) If the RF waveform at exit side has abnormality, rotate the TG7 nut by 90 degrees in counter-clockwise direction. Then perform steps 1) and 2) again.

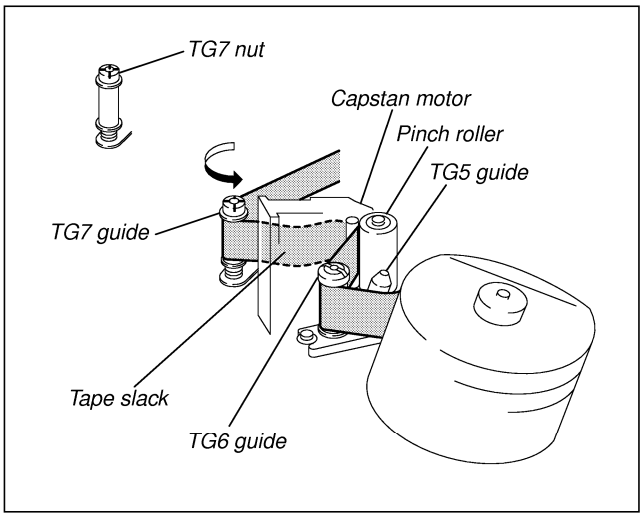


Fig. 4-9

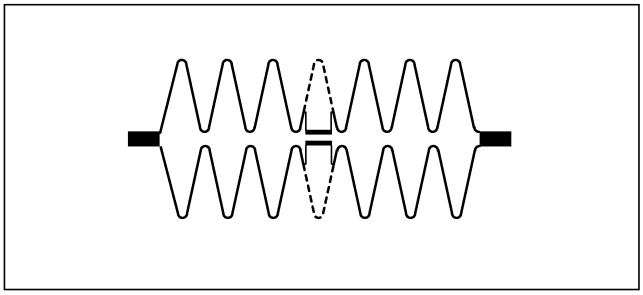


Fig. 4-10

4-5. Check upon Completion of Adjustment

1. Tracking Check

1) Play the tracking alignment tape (XH2-1) (Ref. No. J-5) back.
2) Confirm that RF waveform has amplitude of about 0.65A (65%) in the FWD mode taking the waveform amplitude during CUE/REV mode as A (= 100%). (Refer to Fig. 4-11.)

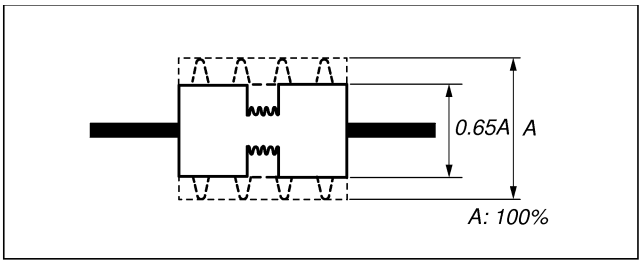


Fig. 4-11

3) Confirm that difference between the minimum amplitude (E.min) and the maximum amplitude (E.max) of RF waveform in the FWD mode is 30% or more taking the waveform amplitude during CUE (or REV) mode as A (= 100%).

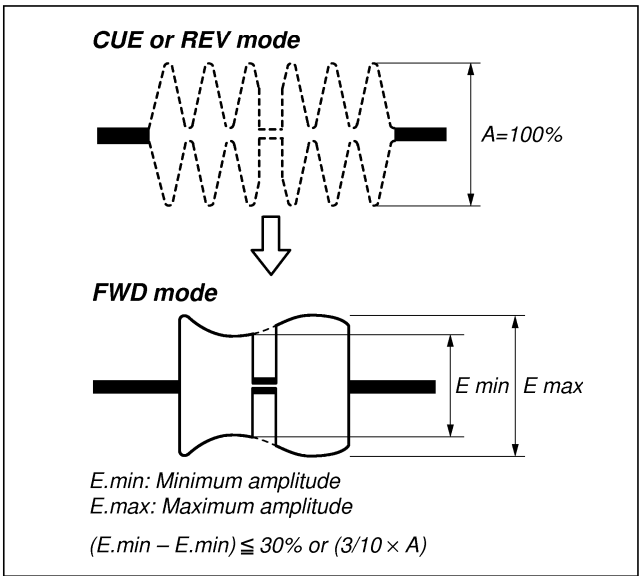


Fig. 4-12

4) Confirm that the RF waveform does not have excessive fluctuation.

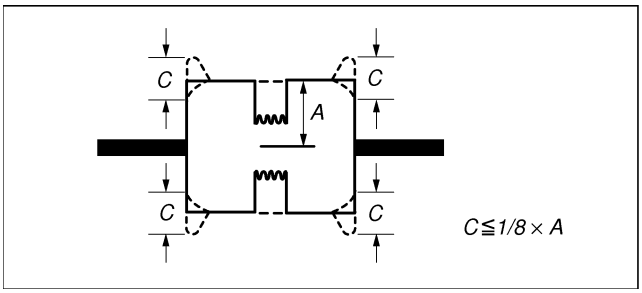


Fig. 4-13

2. CUE/REV Check

1) Play the tracking alignment tape (XH2-1) (Ref. No. J-5) back and enter the REV mode. Confirm that pitches between peaks of RF waveform are equally spaced. (Refer to Fig. 4-14.)
   If pitches between peaks of RF waveform are not equal, perform sections "4-2 Tracking Adjustment" and "4-4. TG7 Guide Adjustment".
2) Enter the CUE mode. Confirm that pitches between peaks of RF waveform are equally spaced. (Refer to Fig. 4-14.) If pitches between peaks of RF waveform are not equal, perform sections "4-2 Tracking Adjustment".

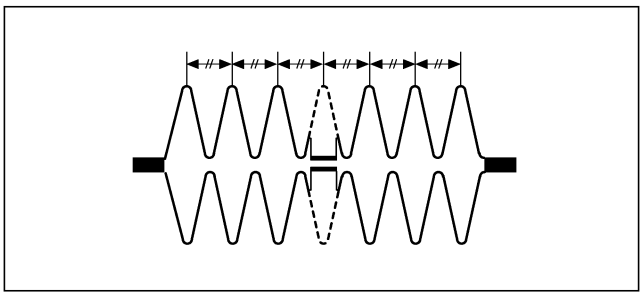


Fig. 4-14

3. Rise-up Check

1) Play the tracking alignment tape (XH2-1) (Ref. No. J-5) back.
2) Establish the FWD playback mode. Confirm that RF waveform rises up in two seconds or less. Confirm also at this time that tape slack does not occur at around pinch roller.
3) Run a tape in CUE/REV mode and FF/REW mode. After that play the tape back and confirm that RF waveform rises up in two seconds or less.
4) Repeat steps 2) and 3) repeatedly.

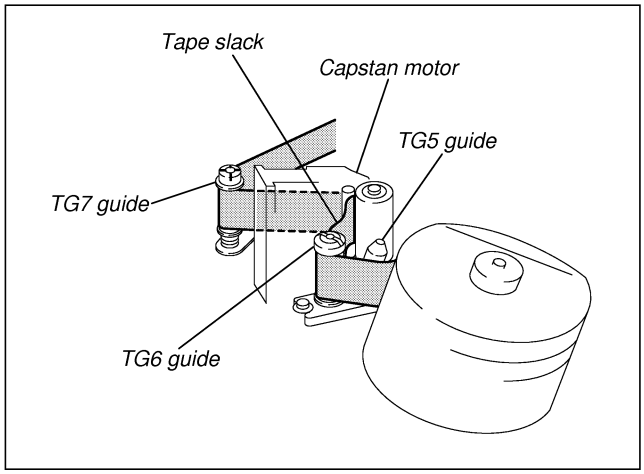


Fig. 4-15

4. Tape Run Check

Run a tape in CUE/REV mode. Confirm to see that major tape curl does not occur at TG2 lower taper, TG3 upper flange, TG6 upper flange and TG7 upper flange during CUE/REV mode.

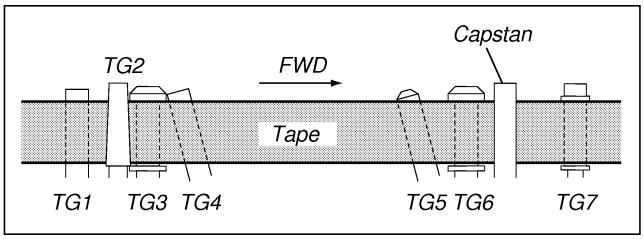
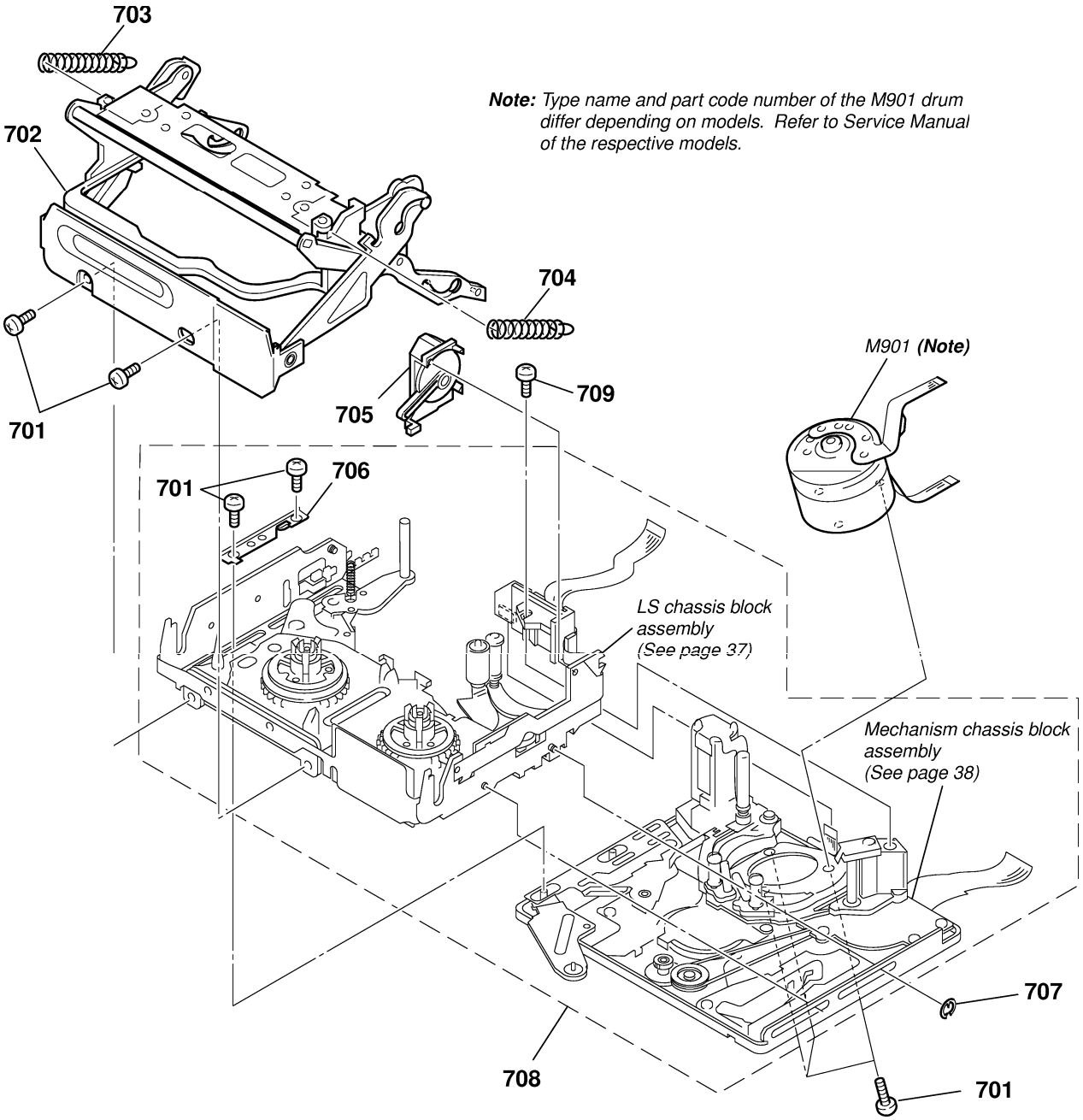


Fig. 4-16

5. Exploded View

5-1. Cassette Compartment Block Assy, Drum Assy Block

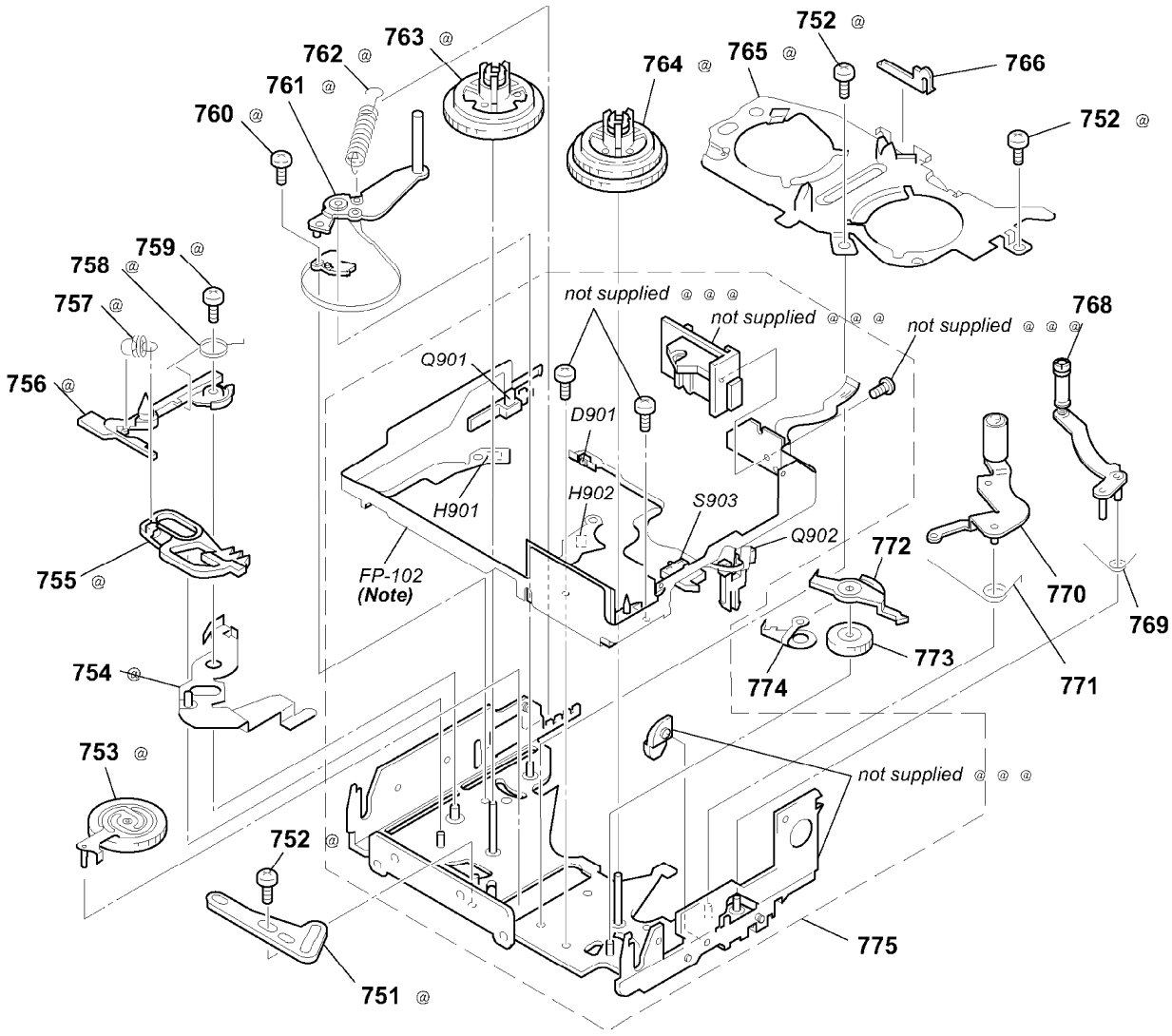


Note: *Type name and part code number of the M901 drum differ depending on models. Refer to Service Manual of the respective models.*

Ref. No.	Part No.	Description	Remarks
701	3-703-816-14	SCREW (M1.4)	
702	X-3950-369-2	CASSETTE COMPARTMENT ASSY	
703	3-059-082-01	SPRING, TENSION	
704	3-059-208-01	SPRING (CASSETTE COMPARTMENT T)	
705	X-3950-370-2	DAMPER ASSY	

Ref. No.	Part No.	Description	Remarks
706	3-059-101-01	RETAINER, LS GUIDE	
707	7-624-102-04	STOP RING 1.5, TYPE -E	
708	A-7028-133-A	MD(J100) SUB ASSY (Y)	
709	3-703-816-41	SCREW (M1.4X2.5), SPECIAL HEAD	
M901	— Note —	DRUM	

5-2. LS Chassis Block Assy

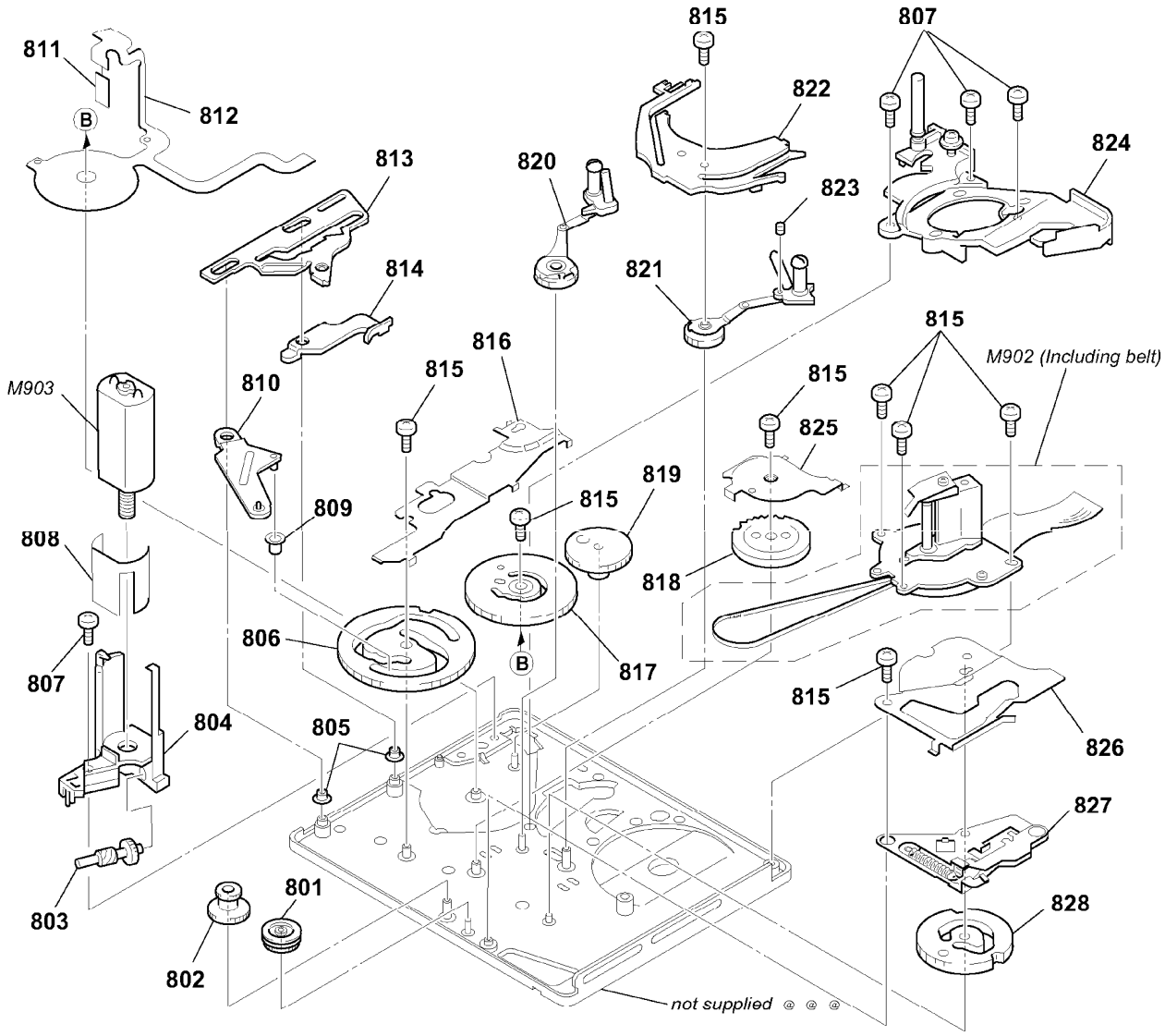


Note: *FP-102 is included in the LS sub assy and is attached to chassis by hot-press.*
Because installation of FP-102 requires a very high accuracy, FP-102 is not supplied as an independent service parts.

Ref. No.	Part No.	Description	Remarks
751	3-059-173-01	PLATE, LS CAM	
752	3-059-100-01	SCREW (M1.4X1.4), SPECIAL HEAD	
753	X-3950-364-1	GEAR ASSY, GOOSENECK	
754	X-3950-371-1	ARM ASSY, BRAKE (S) DRIVING	
755	3-059-166-01	BRAKE (S)	
756	3-059-146-01	POSITIONING (S), CASSETTE	
757	3-059-167-01	SPRING (BRAKE S), TENSION COIL	
758	3-059-169-01	SPRING (BRAKE S ARM), TORSION	
759	3-703-816-14	SCREW (M1.4)	
760	3-059-090-01	SCREW (M1.4X2.5), SPECIAL HEAD	
761	X-3950-358-2	TG1 ASSY	
762	3-059-156-01	SPRING (TENSION REGULATOR)	
763	X-3950-365-2	TABLE ASSY, S REEL	
764	X-3950-366-1	TABLE ASSY, T REEL	

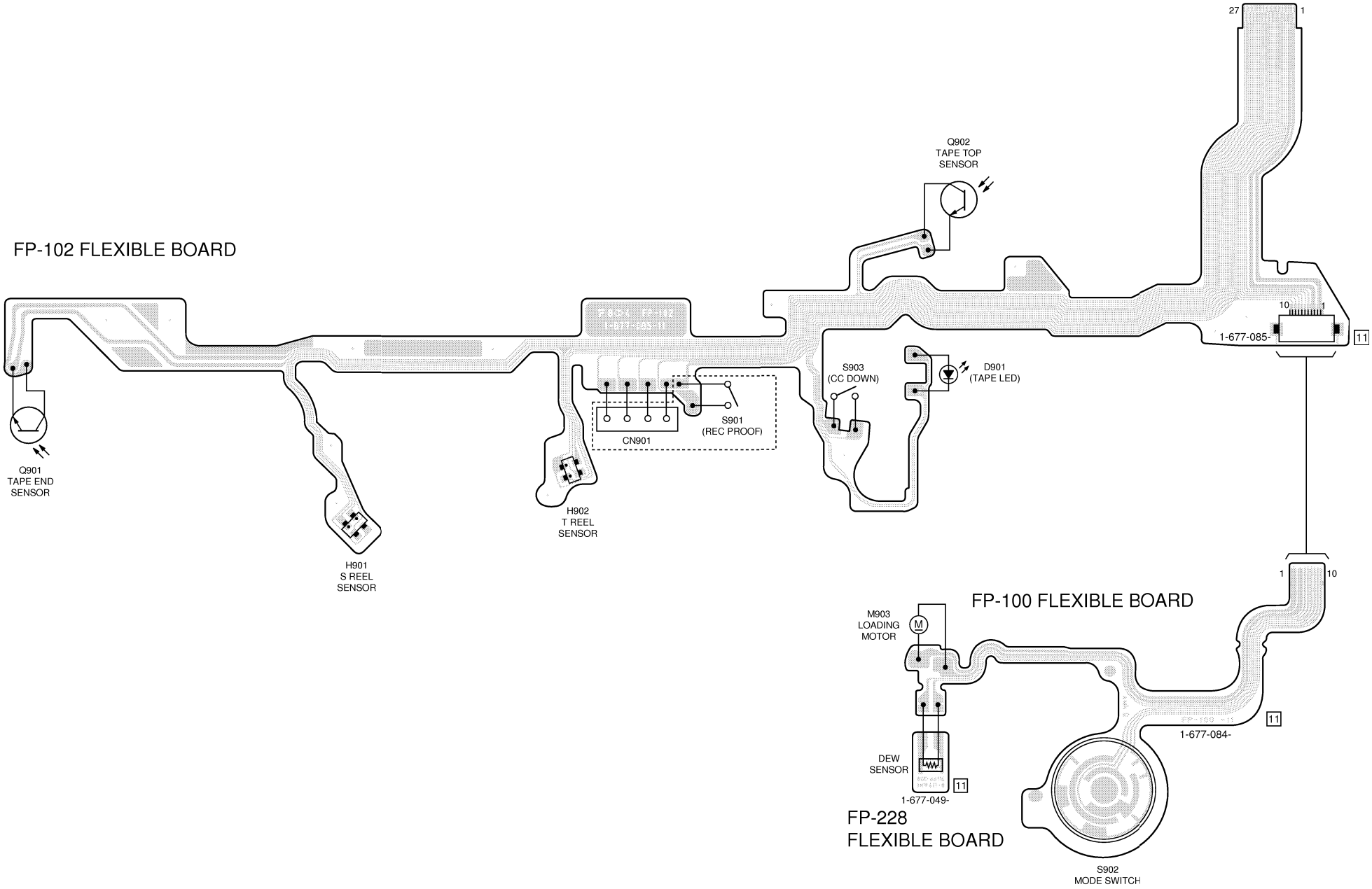
Ref. No.	Part No.	Description	Remarks
766	3-059-093-01	RETAINER, LED	
768	A-7094-819-A	TG7 BLOCK ASSY	
769	3-059-165-01	SPRING (TG7 RETURN), TORSION	
770	X-3950-359-1	ARM ASSY, PINCH	
771	3-059-161-01	SPRING (PINCH RETURN), TORSION	
772	3-059-170-01	BRAKE (T)	
773	3-059-171-01	GEAR (T), BRAKE	
774	3-059-172-01	SPRING (T), BRAKE	
775	A-7094-816-A	LS BLOCK ASSY	
D901	8-719-078-71	DIODE LA57A,SO (TAPE LED)	
H901	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (S REEL)	
H902	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (T REEL)	
Q901	8-729-028-71	TRANSISTOR PN 166, SO (TAPE END)	
Q902	8-729-028-71	TRANSISTOR PN 166, SO (TAPE TOP)	

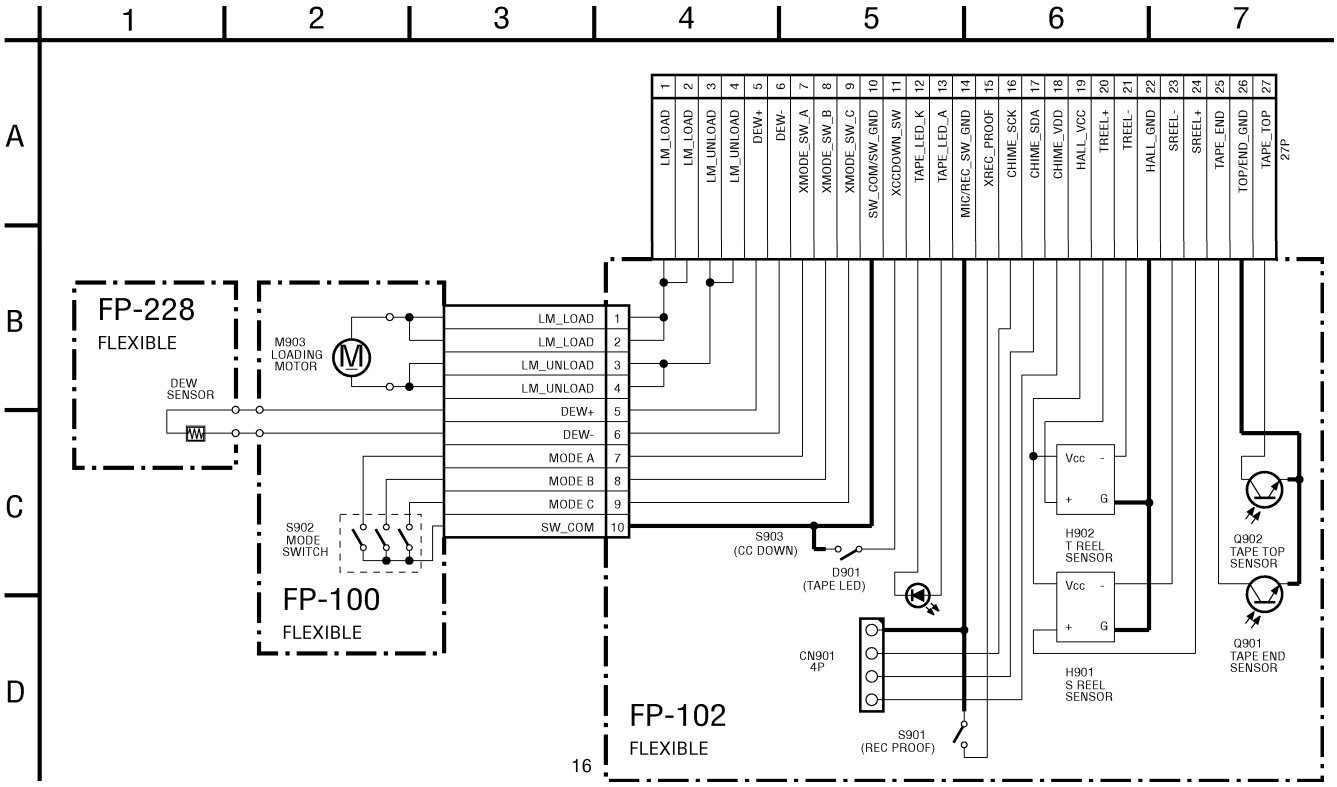
5-3. Mechanism Chassis Block Assy



Ref. No.	Part No.	Description	Remarks
801	3-059-211-01	GEAR, CONVERSION	
802	3-059-220-01	GEAR, RELAY	
803	3-059-187-01	SHAFT, WORM	
804	3-059-186-03	HOLDER, MOTOR	
805	3-060-002-01	ROLLER, LS GUIDE	
806	3-059-189-01	GEAR (A), CAM	
807	3-703-816-41	SCREW (M1.4X2.5), SPECIAL HEAD	
808	3-059-225-01	SHIELD, MOTOR	
809	3-059-191-01	ROLLER, LS	
810	3-059-190-01	ARM, LS	
811	1-677-049-11	PWB, FP-228 FLEXIBLE	
812	1-677-084-11	PWB, FP-100 FLEXIBLE	
813	3-059-149-01	SLIDER, TG1 CAM	
814	3-059-148-01	ARM, TG1 DRIVING	

Ref. No.	Part No.	Description	Remarks
816	3-059-117-01	COVER (A), GEAR	
817	X-3950-367-1	GEAR ASSY, MODE	
818	3-059-139-01	GEAR, GL DRIVING	
819	3-059-188-01	GEAR, DECELERATION	
820	A-7094-818-A	COASTER (S) BLOCK ASSY	
821	A-7094-817-A	COASTER (T) BLOCK ASSY	
822	3-059-126-01	RAIL, GUIDE	
823	3-962-914-01	SCREW (M1.4X2)	
824	A-7094-822-A	DRUM BASE BLOCK ASSY	
825	3-059-118-01	COVER (B), GEAR	
826	3-059-083-01	COVER (C), GEAR	
827	X-3950-368-1	ARM ASSY, PINCH DRIVING	
828	3-059-192-01	GEAR (B), CAM	
M902	8-835-685-01	MOTOR, DC SCD18A/C-NP (INCLUDING BELT)	


FP-102 FLEXIBLE BOARD
27
1
Q902
TAPE TOP
SENSOR
10
1
1-677-085-
11
S903
(CC DOWN)
D901
(TAPE LED)
S901
(REC PROOF)
CN901
Q901
TAPE END
SENSOR
H902
T REEL
SENSOR
H901
S REEL
SENSOR
1
10
FP-100 FLEXIBLE BOARD
M903
LOADING
MOTOR
11
1-677-084-
DEW
SENSOR
11
1-677-049-
FP-228
FLEXIBLE BOARD
S902
MODE SWITCH



7. Electrical Parts List

FP-102

Ref. No.	Part No.	Description	Remarks
		FP-102 FLEXIBLE (Not supplied)	
		**********	
		(Ref.No.;6000Series)	
		< DIODE >	
D901	8-719-078-71	DIODE LN57A.SO	
		< HOLE ELEMENT >	
H901	8-719-067-74	DIODE HW-105A-CDE-T	
H902	8-719-067-74	DIODE HW-105A-CDE-T	
		< TRANSISTOR >	
Q901	8-729-028-71	TRANSISTOR PN166.SO	
Q902	8-729-028-71	TRANSISTOR PN166.SO	
		< SWITCH >	
S903	1-771-326-41	SWITCH, PUSH (1KEY) (CC DOWN)	

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